

STEEL

THE WEEKLY MAGAZINE OF METALWORKING

If you are involved in any way with the specification, selection or application of ferrous or nonferrous alloys, turn to page 80 for the story of a new and cross-indexed SPECIFICATIONS HANDBOOK available through STEEL as an extra service.

PAGE
80

**ALLIS-CHALMERS
COMPLETE
DRIVES**

Simplify

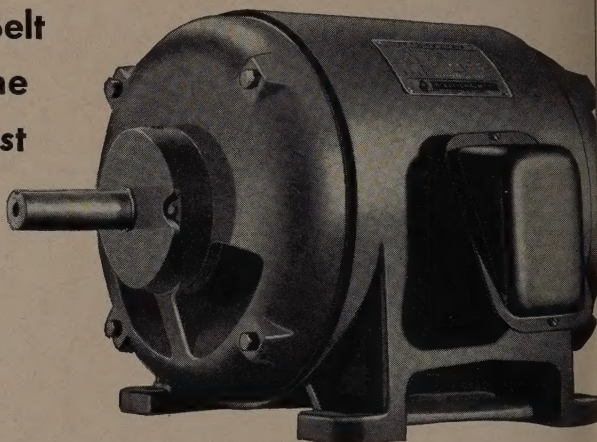
YOUR DRIVE DESIGN PROBLEMS

**Allis-Chalmers Matched
Motors, Control and V-Belt
Drives Save Design Time
and Cut Installation Cost**



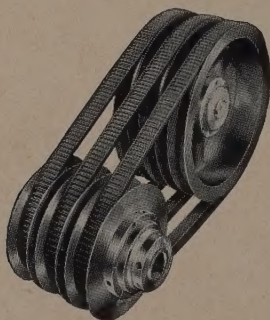
CONTROL

Complete matched control for any motor, including manual and magnetic starters, pushbuttons, and variable speed control.



MOTORS

Standard open drip-proof, splash-proof, totally-enclosed, fan-cooled and explosion-proof, ½ hp and up. Also wound rotor and direct current. Special motors to meet your requirements.



Texrope V-BELT DRIVES Fixed speed and Vari-Pitch sheaves with stationary or motion control. Famous grommet belt construction. Most complete line of V-belt drive equipment in the industry.

Get the Kind of Help You Need

Allis-Chalmers representatives in every industrial center are at your command. Just call the office nearest you or write Allis-Chalmers, Milwaukee 1, Wisconsin for helpful literature.

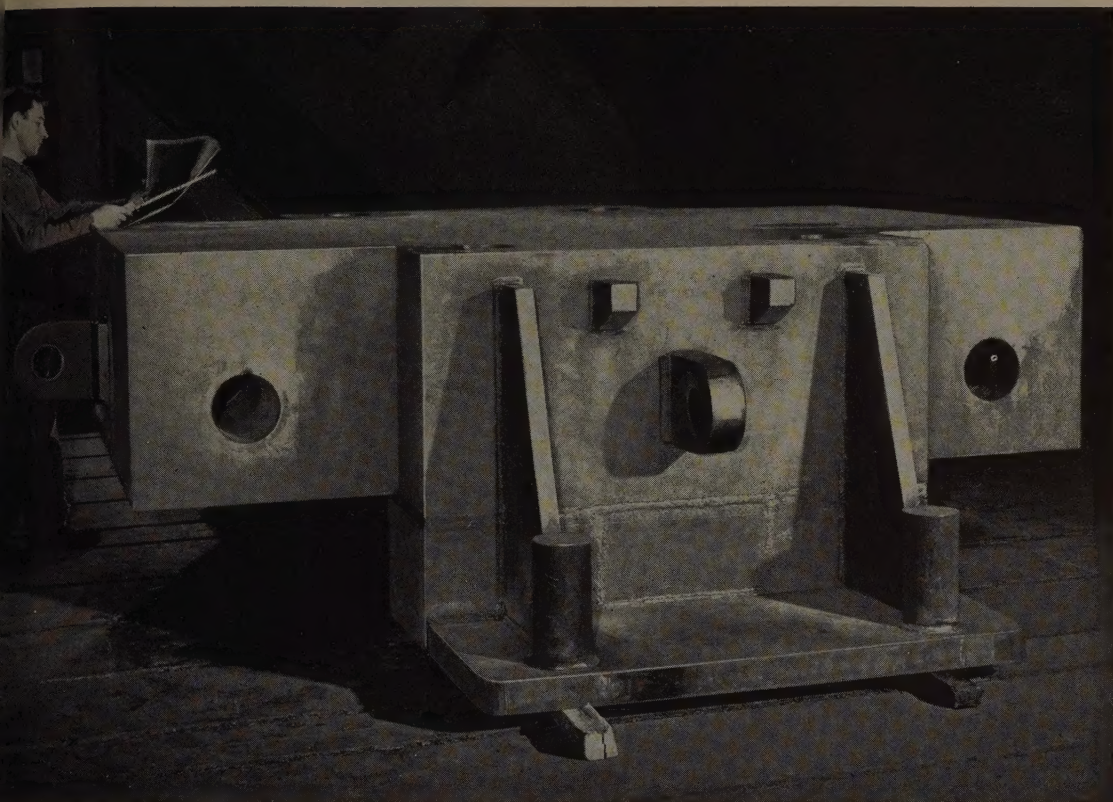
Allis-Chalmers Motors and Control
Texrope V-Belt Drives

5186052
2086051

Texrope and Vari-Pitch are Allis-Chalmers trademarks.

ALLIS-CHALMERS





This 52-ton Weldment is Base for Forging Press

igned to support a 1000-ton
ing press, this weldment was
ed by combining forgings
plate steel. It is 152 in. long,
in. wide, and 43 in. high,
weighs 103,673 lb. It was
e in Bethlehem's Weldments
o.

you require bases, frames, per-
an entire press, or some other
of manufacturing equipment
arts, the chances are good that
needs can be met economically,
er wholly or in part, by using
lehem Weldments.

ADVANTAGES OF BETHLEHEM WELDMENTS

1. Bethlehem Weldments eliminate excess weight, without any sacrifice in rigidity. This frequently leads to a reduction in manufacturing cost for the finished product.
2. They are versatile, for they can be made in a wide size-range, either as simple parts or intricate assemblies.
3. They offer greater latitude in product design, for the steel from which they are made can be bent,

pressed or otherwise shaped prior to welding.

4. They can be used alone, or can be combined effectively with forgings or castings.

★ ★ ★

If you would like additional information about Bethlehem Weldments, the nearest Bethlehem office is at your service.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

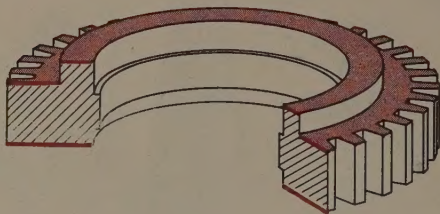
On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation. Export
Distributor: Bethlehem Steel Export Corporation

BETHLEHEM WELDMENTS



Heald Model 261 Rotary

GRINDS 3 FACES



**Two faces and hub end of
steel gears surface ground
on one machine, with
quick-change setup**

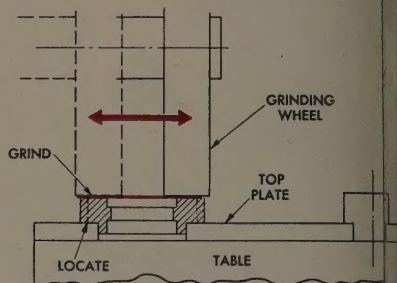
A gear job like this is a natural for the Heald Model 261 Rotary Surface Grinding Machine. The setup illustrated here combines high precision with fast, easy operation and quick changeover for each of the three surfaces ground.

An auxiliary top plate fastened to the rotating chuck is recessed to hold ten gears for the first two operations. A stake fixture in the center holds the parts individually for the final operation. In the first operation, the gears are ground ten at a time on the large face opposite the hub. For the second operation, the parts are turned over and the hub ends ground ten at a time. In the third operation, the parts are transferred to the stake fixture in the center of the chuck, where they are ground singly on the adjacent hub face.

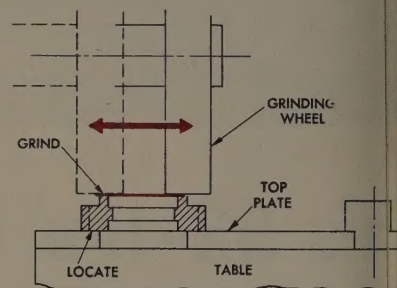
Remember—when it comes to precision finishing, it pays to come to Heald.



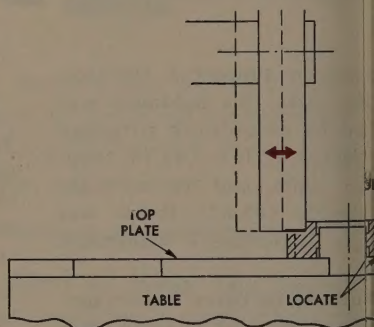
*Heald precision speeds
the nation's production*



First Operation: Parts ground ten at a time on large face.



Second Operation: Parts ground ten at a time on hub end.



Third Operation: Parts ground singly on adjacent hub face.

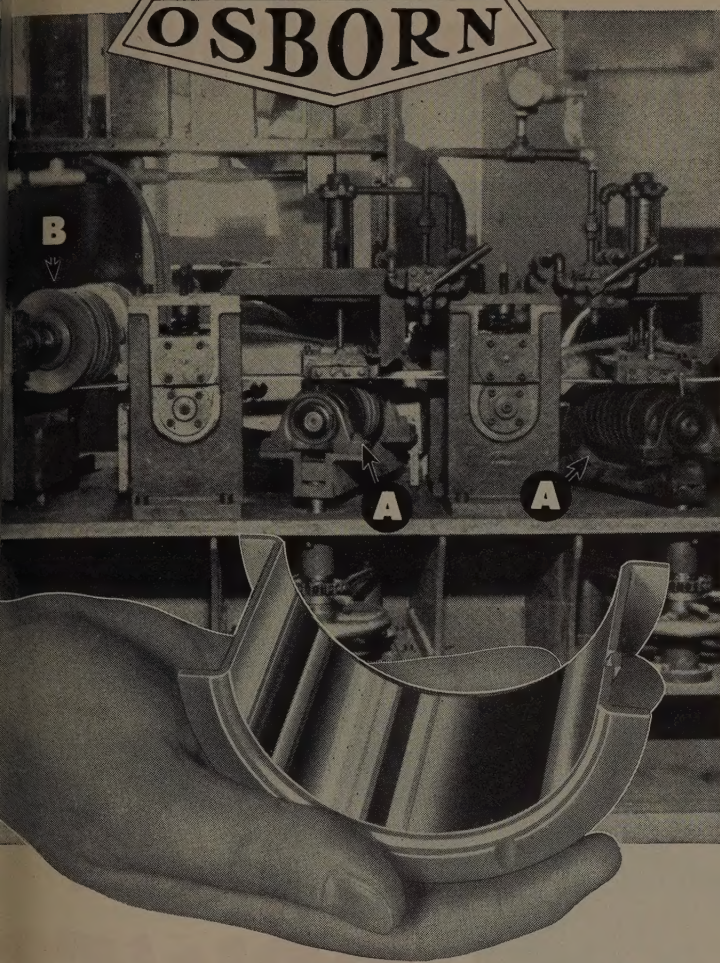
INTERNAL AND ROTARY SURFACE GRINDING MACHINES AND BORE-MACHINES

THE HEALD MACHINE COMPANY

WORCESTER 6, MASSACHUSETTS

Branch Offices: Chicago • Cleveland • Dayton • Detroit • Indianapolis • New York

OSBORN



Will "automatic" ideas like these cut your costs?

THIS machine does two jobs at one time . . . does them thoroughly by power brushing . . . at the push of a button.

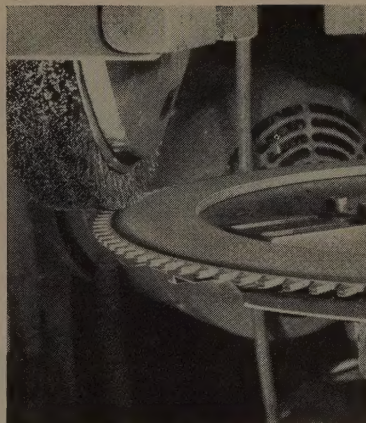
Perhaps a similar brushing method can help cut *your* costs, boost *your* production and improve the quality of *your* products.

The machine developed with the help of the **Osborn Brushing Analyst** uses steel-backed, babbitt-lined strip for production of automotive sleeve rings. With the strip traveling continuously, Osborn Master® Wheel (A) remove all dirt, rust and metal particles from the steel surface. Osborn Monarch® Sections (B) then thoroughly clean the babbitt side.

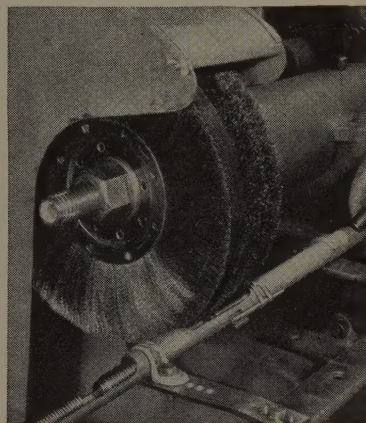
This is typical of the cooperation which your **Osborn Brushing Analyst** give you to solve problems of product cleaning, burr removal, roughing, finishing and finishing. For help, call or write *The Osborn Manufacturing Company, Dept. G-2, 5401 Hamilton Avenue, Cleveland 14, Ohio.*

Osborn Brushes

OSBORN POWER, MAINTENANCE AND PAINT BRUSHES AND FOUNDRY MOLDING MACHINES



SAVES 12 MEN. This is one station of a five-station rotary automatic machine equipped with Osborn power brushes that removes burrs and sharp corners of clutch disc teeth. Formerly done by hand. Saves 12 skilled men.

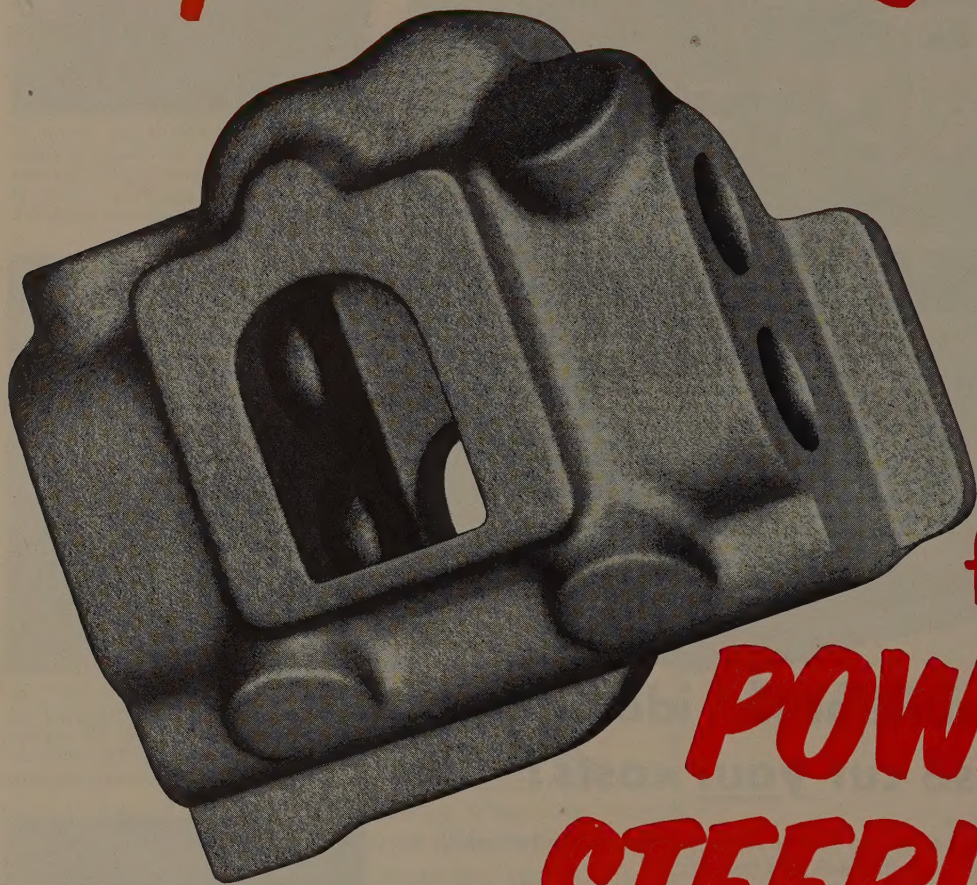


9 TIMES AS FAST. This simple pipe fixture provides the means of cleaning threads of set screws. Can be applied to many cylindrical parts. Time was cut from 18 seconds to 2 seconds with this Osborn brushing idea.



10 TIMES AS FAST. This shows two gears before and after deburring by a new Osborn power brushing method. Note smooth uniform results. Time was cut from 3 minutes to 18 seconds.

Eaton Permanent Mold Gray Iron Castings—



for
**POWER
STEERING**



Send for your free copy of the 32-page illustrated booklet "The Eaton Permanent Mold Foundry." It tells the story of Permanent Mold Castings and takes you on a picture-tour of the Eaton Foundry at Vassar, Michigan.

EATON MANUFACTURING COMPANY

General Offices: CLEVELAND, OHIO

FOUNDRY DIVISION: 9771 FRENCH ROAD • DETROIT 13, MICHIGAN



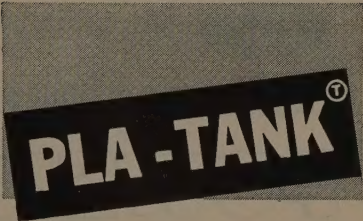
PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings • Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

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Editorial, Business Staffs—16. Advertising Index—148. Editorial Index available semi-annually. STEEL also is indexed by Engineering Index Inc., 29 West 39th St., New York 18

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DUCT-WORK

is

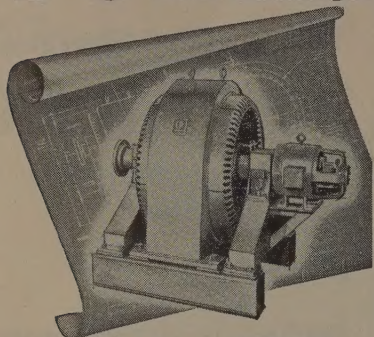
- LIGHT, easy to erect
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- RESISTANT to many corrosive fumes
- ECONOMICAL, made in stock units
- VERSATILE, may be custom-molded
- AVAILABLE, from new larger plant
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look to... **EP**

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Send in the coupon below for detailed information about our Custom-Engineered synchronous motors and generators . . . d-c motors and generators . . . induction motors . . . battery chargers . . . frequency changers.

A nation-wide sales engineering and service organization stands ready to meet all User requirements.

THE ELECTRIC PRODUCTS COMPANY



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CLEVELAND 12, OHIO

Attach coupon to your
letterhead for your copy
of Bulletin 2-200.

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TITLE _____

COMPANY _____

STREET _____

CITY _____ ZONE _____ STATE _____

X-74

Behind the Scenes...

Sign of the Times

Introduction of the administration's budget 10 days ago reminded us of a bit of intelligence relayed by New York Resident Editor Sam Baker on an assignment in Washington. It forces us to regard all budget proposals as something that should be taken with more than just a grain of salt.

While roaming through the Pentagon's endless maze, this correspondent relates, he came upon the following sign in the Defense Department comptroller's office:

BUDGET PHILOSOPHY

. . . That a man's reach must exceed his grasp, else what's a heaven for? . . .

Cover Stuff

We'd like to call your attention to the story on page 80 of this issue. It's all about the new "STEEL's Specifications Handbook." We think the Handbook is a hot item. You'll want to read the story behind its development.

New Editor

Spotting a new face in the editorial department upstairs and being naturally nosey, we have now met Van Caldwell, new assistant editor. He's going to work primarily on editorial layout and presentation.

Van has a bachelor's degree from Hamilton College and a master's degree from Western Reserve University. He's married and has one child.

Optional Standards

We were interested to note that the Department of Agriculture has authorized a revision in the standards pertaining to size of the holes in Swiss cheese. New standards are purely voluntary and the main purpose is to give cheese traders a common language.

The former standards called for a hole $\frac{3}{4}$ -inch in diameter. Revision permits new holes to be $\frac{1}{2}$ -inch across. There's no mention of limits, so we assume it's plus or minus nothing.

In case you are getting cocky, thinking they did this to give you

more cheese, we'll tell you that it was done for another reason. It seems the holes grow as the cheese is aged and the department feels the extra aging to get $\frac{3}{4}$ -inch holes unnecessary and does not substantially change the quality of the cheese.

Let us know if any of you are interested in joining a pressure group to agitate for a corresponding percentage increase in the legal size of shot glasses.

One Point of View

According to their report on recent "Stockholder Opinion Survey," Pitney-Bowes Inc., Stamford, Conn., got the following answers from a stockholder named Groucho Marx of Beverly Hills, Calif.

Asked what factor most influenced his decision to buy the stock, he replied, "The wind was from the north."

His rating of the company's annual report was, "tops in fiction."

Puzzle Corner

Answer to the puzzle in the Jan. (Yearbook) issue is that Al and Sam's horse clips along at 33 caps per second. First in with that puzzle were George W. Frederick, Republic Steel Corp. and R. D. Borden, Elco Services Inc.

Here's this week's. For some time now Sam and Al have been collecting bottle caps up at their hunting and fishing cabin. Last week he decided to tack the caps to the wall in a neat pattern.

First they tried nice even rows of 10 caps each. When they got to the last row they had only 9 left. Then they tried rows of 9 each but the last row had only 8 caps.

Then they tried rows of 7, 6, 5, 3 and 2 caps, but each time the last row had one cap short. How many bottle caps were they trying to hang? (They could have opened one more bottle and saved themselves a lot of trouble, but they're stubborn and wouldn't have had a puzzle.)

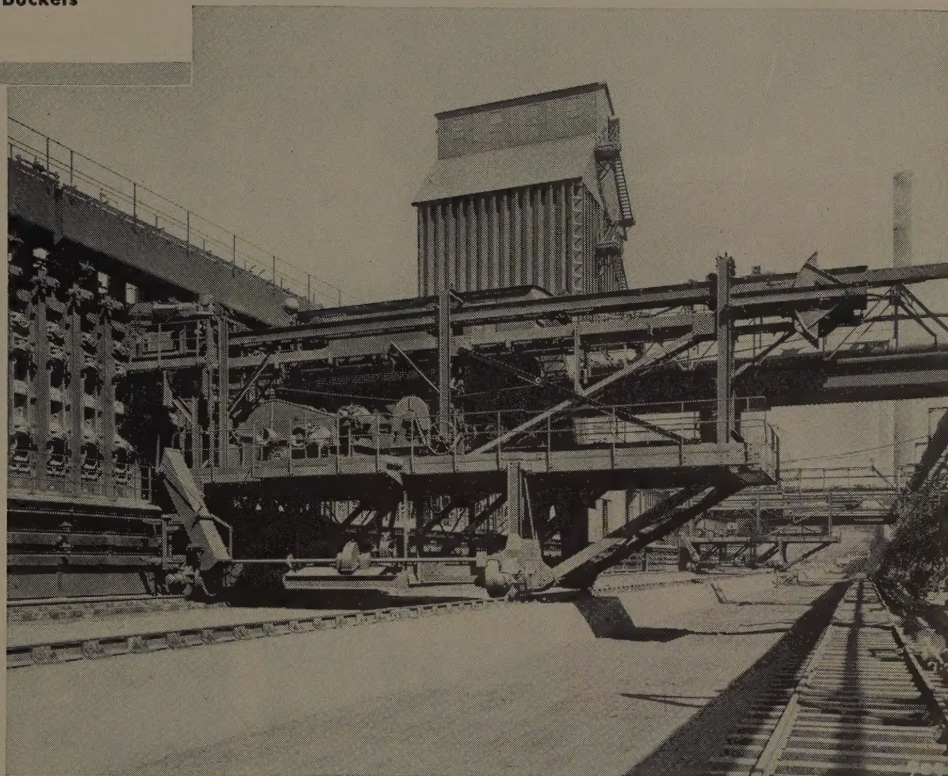
Shrdlu

Wellman will build it

Special Cranes
Coke Pushers
Gas Producer Plants
Ore Bridges
Charging Machines
Forging Manipulators
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Gas Reversing Valves
Mine Hoists
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→ **Wellman
coke pushers**

...engineered for economical,
trouble-free performance



*Wellman Combined
Pusher, Coal Lev-
el and Door Extractor
operation at Beth-
lehem Steel's Lacka-
wanna Plant.*

● Many of the world's most modern byproduct coke oven plants are Wellman equipped. The Wellman Engineering Company's more than half-century experience in building heavy machinery guarantees sound design and expert construction. Wellman equipment provides peak economy, maximum safety and trouble-free performance under a wide variety of operating conditions.

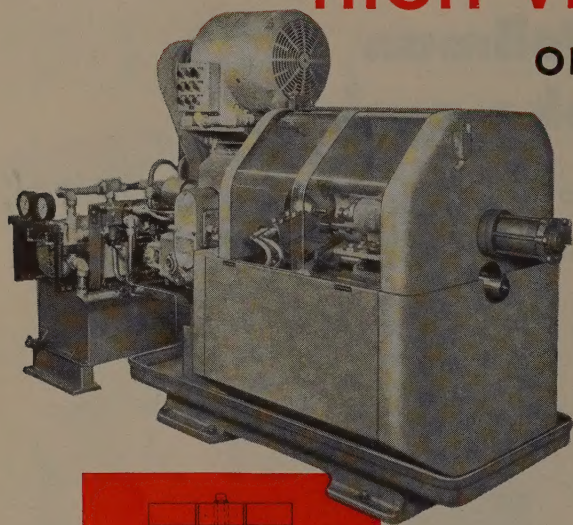
THE WELLMAN ENGINEERING COMPANY

7000 CENTRAL AVENUE • CLEVELAND 4, OHIO

AUTOMATICITY BACKS UP

HIGH VELOCITY TURNING

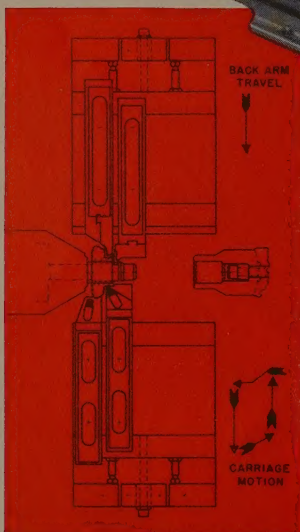
ON FAY AUTOMATICS



SIDE GEARS

18 Seconds Floor to Floor — 635 SFM

Two 8" Fays, with Automatic Sequential Control, machine all exterior surfaces of the blanks in two operations; one machine for each. The major diameter is 2-15/16" and floor to floor time is approximately 18 seconds in each operation.

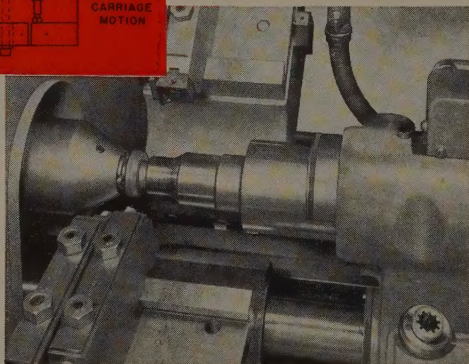


Automatic Cycle—The machines are equipped with automatically operated splash guards and automatically air-operated tailstock rams for pressing the blank onto a splined arbor equipped with automatically operated ejector pins.

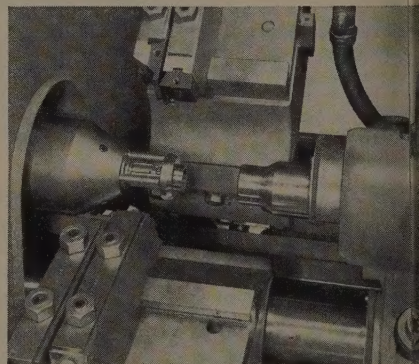
The operator places the blank on the end of the arbor, and pushes the cycle start button. *Automatically, the guard closes, the tailstock ram presses the piece onto the arbor and then retracts. The carriage turns, the back arm faces, and at the end of the cuts, ejector pins push the piece onto the loading section of the arbor from which it is removed manually.*

FIRST OPERATION:

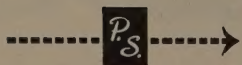
Note intricate movements of the carriage, which turns the hub, back angle and major diameter. The back arm faces and forms.



Tailstock presses blank on arbor



Ejector pins release blank from arbor



Production management regularly relies upon the engineering services of Jones & Lamson for the latest information on methods, costs, tooling and performance. Why not consult us about YOUR turning, threading and inspection problems.

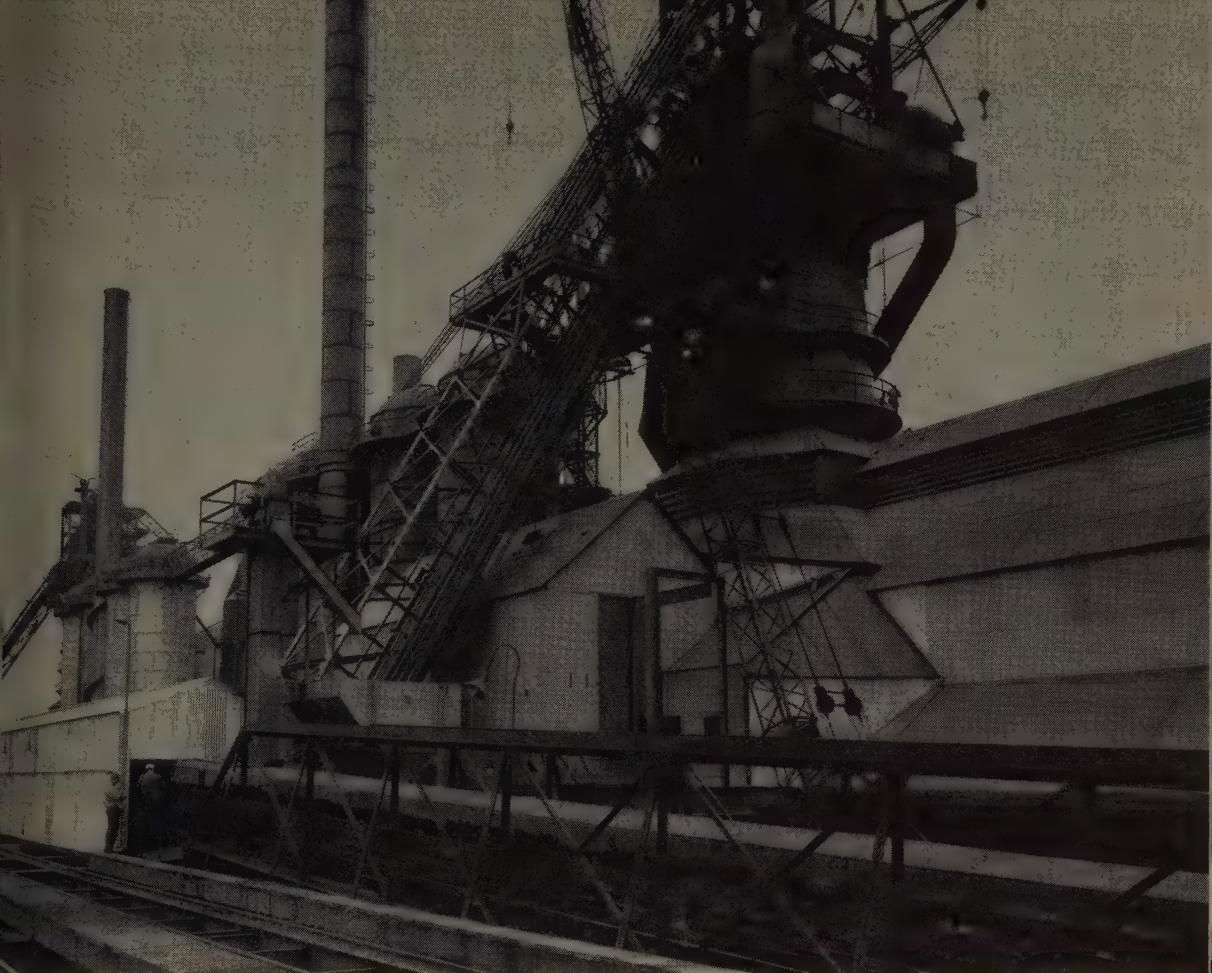
JONES & LAMSON

Machine Tool Craftsmen
Since 1835

JONES & LAMSON MACHINE CO., 517 Clinton St., Dept. 710, Springfield, Vt., U.S.A.

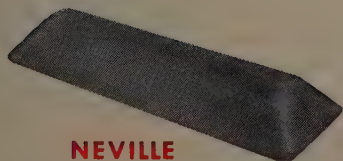


FAY LATHE DIVISION



Now ready to make more **Neville Pig Iron** for you

THE new blast furnace at our Neville Island plant is now in operation. Its production substantially increases our total output of Neville Pig Iron for the foundry trade. The new furnace will provide an even wider range of foundry and malleable grades and will enable us to serve our foundry friends better than ever. ● We will be glad to discuss your requirements with you.




NEVILLE

Quality Pig Iron for the
Foundry Trade

W&D 4429

PIG IRON DIVISION

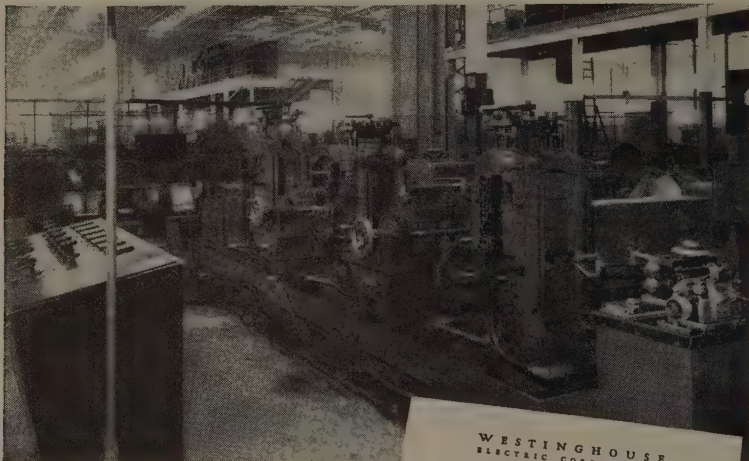


PITTSBURGH

COKE & CHEMICAL CO.

Grant Building • Pittsburgh 19, Pa.

TAKE IT FROM Westinghouse



TORRINGTON

high speed

FLAT WIRE MILL

LINES...

are ruggedly built...can really take it
...cost only 1/10 as much to maintain

The Superintendent of Westinghouse's Copper Wire Department at Buffalo — who has watched his 4 Torrington High-Speed Flat Wire Mill Lines deliver the goods for more than four years, writes:

"The machines are ruggedly built and can take it. . . . Cost of maintenance and repair, as compared with equipment of similar size and cost, has been ten to one in favor of Torrington Mills. This is good performance . . . and helps us maintain good customer relations in meeting our production requirements. . . . Three of the four mills have averaged 900,000 pounds per month; the 4th mill is used principally for production of the larger rectangular and near square sizes."

Call or write Torrington for information and name of nearest Torrington representative.

The **TORRINGTON**

MANUFACTURING COMPANY • TORRINGTON, CONNECTICUT

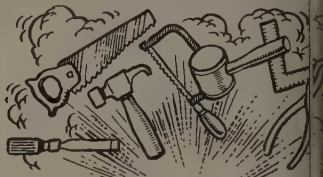


DESIGNERS AND BUILDERS OF MILL MACHINERY FOR SIXTY-FIVE YEARS

LETTERS

TO THE EDITORS

Blasting Tool Adds Tool Life



We noted with interest your "Production and Engineering News at a Glance" item on p. 103 of the Dec. 15 issue of STEEL, stating that a blasting tool had been perfected using 5000 grit material which adds to cutting tool life. We would like very much to learn if there is a distributor for this type tool in the Los Angeles area.

If you do not have this information available, can you advise who we should write?

R. M. H.
district purchasing
Aluminum Co. of
Los Angeles

• Write to the Cro-Plate Co., Hartford 5, Conn., for further information on the blasting tools.—ED.

Congratulations

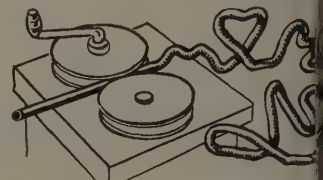
We are very pleased with your "More Indium Metal—Can You Get It?" (Dec. 8, p. 98) and would congratulate you on the interesting way in which you have presented the material. It is very easy to read.

L. V. F.
Consolidated Mining & Smelting Co. of Canada
Montreal, Canada

We wish to thank you for forwarding us a copy of the article which appears in STEEL (Dec. 29, p. 129) regarding the organization of our company. This is a very fine magazine and reaches many fine people.

James A. H.
Quaid Fabrication
Philadelphia

No Need of Hand Straightening



In the upper left hand corner of p. 165 of the Dec. 1 issue of STEEL is an illustration of a hand straightening machine and some comments on a straightening machine. We believe this is to be a news item and if so we would like to take exception to a statement in the item. The statement "high production speeds on standard tube straightening machines do not guarantee a quality of seamless brass and steel tube" is in error. It does not appear that a Medart Straightening Machine we believe that the wording of statements should be made in a manner that would not be so all inclusive.

Our standard tube straightening machine

Continued on following page

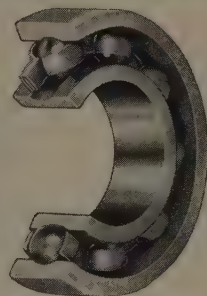
NICE

Announces New Lines!

PRODUCT DESIGNERS will be interested in these new "cost saving" additions to the NICE Line. FOR COMPLETE INFORMATION WRITE FOR CATALOG NO. 150.

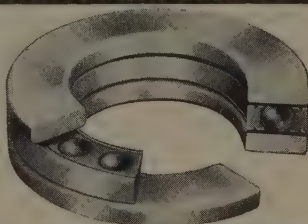
"C" SERIES GROUND RADIAL BEARINGS SOLID RACE TYPE WITH BALL RETAINER

The new NICE "C" series are precision radial bearings made in inch dimensions which correspond to established light duty inch standard sizes. Produced with ground and polished race ways and assembled with chrome alloy balls, they are designed for light duty radial, thrust or combined load applications and speeds in the neighborhood of 5000 R.P.M. maximum. "C" series radials are available without shields, single shielded or double shielded.

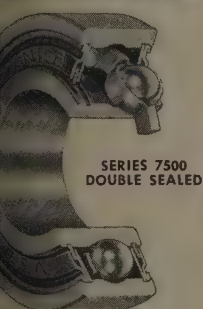


"FR" SERIES GROUND THRUST BEARINGS FLAT BALL RACES WITH BALL RETAINER

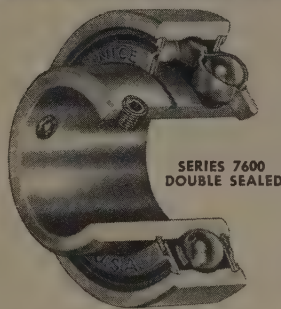
"FR" series flat race thrust bearings conform to established inch standard sizes and are recommended for light loads and speeds up to 2500 R.P.M. The ball cages are made from solid brass stock for durability and long life and the ball track surfaces are precision ground to a high finish.



7500 AND 7600 SERIES GROUND RADIAL BEARINGS SOLID RACE TYPE WITH BALL RETAINER-LABYRINTH COMPOSITION SEALED

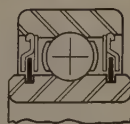


SERIES 7500
DOUBLE SEALED



SERIES 7600
DOUBLE SEALED

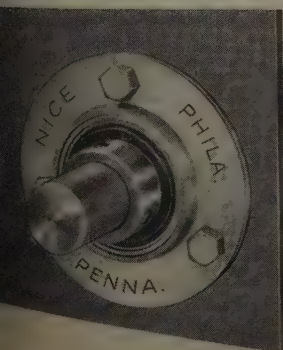
Series 7500 and 7600 bearings are recommended for applications requiring the accuracy of rotation and quiet performance of close limit precision bearings, and where a highly efficient seal is required to retain lubricant and exclude foreign materials. They are designed for medium loads and speeds in the neighborhood of 5000 R.P.M. maximum, and are made in inch standard sizes. Normally double sealed, series 7500 and 7600 bearings can be produced to order with seals on one side only or without seals.



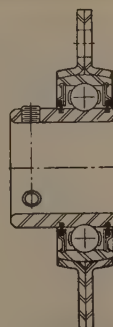
SEAL DETAIL

An oil resistant synthetic rubber coated fabric ring fits into a groove in the inner race and the recess formed by the inner and outer dust caps.

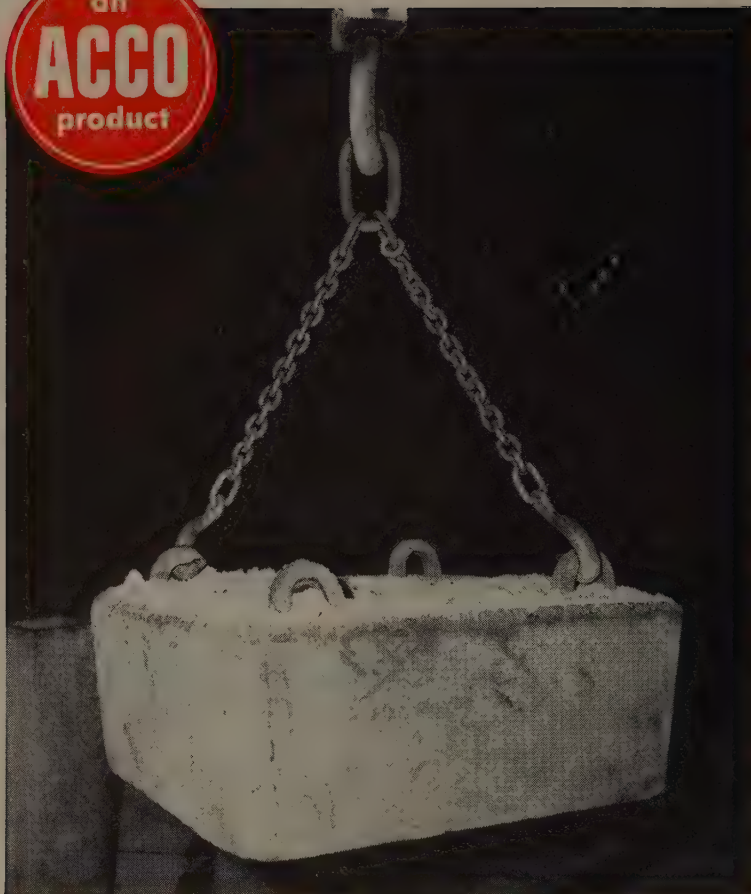
FLANGE MOUNTED SELF-ALIGNING RADIAL BEARINGS LABYRINTH COMPOSITION SEALED-TWO LOCKING SET SCREWS



NICE series F100 flange mounted radial bearings are designed for easy application to machine frames. The self-aligning feature together with their highly efficient labyrinth composition seal (see detail above), makes them ideal for a wide variety of applications such as farm machinery, conveyors, power transmissions, blower and fan installations. They are available in popular inch shaft sizes and are recommended for medium load and speed service conditions.



NICE BALL BEARING COMPANY
NICETOWN · PHILADELPHIA · PENNSYLVANIA



Why Workmen Like ACCO Registered Sling Chains

• One rigger said: "It's a neat factory-made unit that we know is made properly." A foreman said: "My men look for the identification ring. It's sort of a safety indicator."

Every ACCO Registered Sling Chain is built and tested as a unit and bears the ACCO identification ring. The sling illustrated above has ACCO Foundry Hooks designed for use on casting molds which get very hot. It is engineered for this particular job and will give long service. It is one of the many types of Registered Sling Chain made by AMERICAN to handle safely all kinds of lifting jobs.

Check today with your AMERICAN CHAIN distributor who will help you decide on the correct ACCO Registered Sling Chains for your use. Or, write our York, Pa. Office for a copy of **DH-314 ACCO Registered Sling Chain Catalog**.

ACCO



**AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE**

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles,
New York, Philadelphia, Pittsburgh, Portland,
San Francisco, Bridgeport, Conn.

**American
Chain**

LETTERS

Concluded from preceding page

chines do guarantee a high quality of seamless brass and copper tubing at high production speeds and we do require that plant officials include manual work to secure desired straightness.

W. I. Eke
vice president, 18
Medard
St.

• That story was originally retracted on p. 189, Dec. 15 issue.—ED.

Checking on High Temperature



Your article entitled "Metals in the Atomic Age" (Oct. 13, p. 148) is of great interest to me.

Could you advise me from whom I could secure additional information regarding high temperature alloys. We also like to know if this material is available and where same could be obtained.

Clark E. Gordon
Clark E. Gordon
Dro

• Sources for further information: Battelle Memorial Institute, Columbus, O.; Armour Research Foundation, Chicago; Temple University Research Institute, Philadelphia; International Nickel Co., New York; Haynes Steel Division, Union Carbide & Carbon Corp., Kokomo, Ind.; and National Alloy Division, Blaw-Knox Co., Blair (Pittsburgh), Pa.—ED.

Now Is the Time

Speaking as an old time consulting machinery salesman, distributor and manufacturer, may I congratulate you on the breadth and expression of your article "Now Is the Time" in your 35th annual issue (Jan. 5, p. 111).

Paul B. Coe
White Sulphur Springs
Sulphur Springs, Pa.

Proven Plastic Dies

On p. 90 of the Dec. 15 issue of *STEEL* you mention that there are three companies now making plastic dies and six more will be making them shortly. We would appreciate it if you could send us the names of these companies so that we may contact them.

Frank Seibert
director of purchase
Magna Engineering
Menlo Park, Calif.

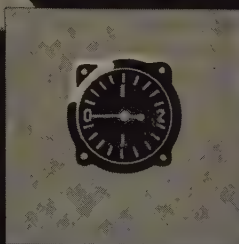
• The three makers of plastic dies referred to in the Dec. 15 issue of *STEEL* are located in the Detroit area. They are: Creative Industries of Detroit; Richard Bros. Division, Allied Products Corp. and Warren Plastics & Engineering Inc. We suggest you contact Reliance Inc., Los Angeles supplier of the material from which these dies are made for the names of die makers in the area who have had experience with the plastic.—ED.

HWD

... best for all three



HWD #3
for
die casting dies



HWD #2
for
extrusion dies



HWD #1
for
forging dies



R-266

Sterling's HWD steels, because of their versatility in forging dies, extrusion dies, and casting dies, are becoming the popular choice throughout the industry. Here are many important reasons why: longer die life is assured because HWD steels maintain their hardness. Cracking is greatly minimized because of HWD's exceptional toughness. HWD steels have real resistance

to "washing" in die casting operations.

- (4) A thorough series of inspections, including ultrasonic testing, insures the very best in top quality steel.
- (5) Air hardening insures minimum movement in heat treatment.
- (6) Balanced alloy composition provides exceptional resistance to checking or cracking when the steel is cooled by water.

HWD Comes in Three Grades

HWD #1 and #2 are essentially the same steel except that HWD #2 has no tungsten, giving it more resistance to thermal shock. HWD #3 is Firth Sterling's latest modification of HWD #2 and has a higher Vanadium content to increase the life of die casting dies.



Firth Sterling INC.

* AND WAREHOUSES: HARTFORD NEW YORK* DETROIT CLEVELAND
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GENERAL OFFICES: 3113 FORBES ST., PITTSBURGH 30, PA.

HYPRO features that lower un- costs... *broaden work range*

G&L Double Housing Planers for extra-heavy and carbide tooling applications

These advanced features make G&L Double-Housing Planers the most modern development of their type for precision machining available anywhere.

Modern HYPRO planer construction shown here simplifies the most complex setups. It assures greater machine rigidity, accuracy and speed for extra-heavy applications and use of alloy and carbide tooling. Table widths — 36" to 120" allow full range of operations on both "normal" and massive size castings or weldments. Maximum feeds and speeds may be used regardless of amount of metal to be removed for rough and finish machining. Logical arrangement of all components, safety and operating controls assures smooth, convenient operation.

HYPRO planers have versatility to meet unusual production demands. To speed up overall operations, castings can be mounted in tandem. In this type of operation two rail heads and two side heads can be combined for multiple roughing cuts. This tandem arrangement saves tool set-up time . . . also insures precision alignment of bearing ways and accurate planing of all flat surfaces. This arrangement provides identical interchangeable work pieces.

Whether your work is simple or complex . . . large or small let these modern G&L HYPRO features work for you. Best way to find out how you can improve planing efficiency is to contact your nearest G&L representative. He'll tell you all about G&L's unbiased Job Analysis. Remember, there's no obligation . . . and DELIVERY ON G&L MACHINES MIGHT BE BETTER THAN YOU THINK!

Logical Grouping of Electrical Safety Devices — assures most complete protection of machine and operator.

New HYPRO Pneumatic Tool Life — prolong tool life. Advanced carbide snubber design assure shockless block reseating without disturbing settings.

Patented Automatic Hydraulic Stop — protects against gear damage. Acts with a uniform decelerating rate without shock to planer in event of electrical or control failure. Eliminates "trans" — rack sections, cranes, etc.

Double-Length Enclosed Bed — depth through gear section for strength, rigidity, smoother table

GIDDINGS & LEWIS

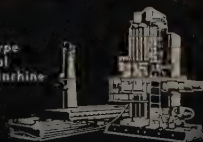
Table Type
Horizontal
Boring Machine



Floor Type
Horizontal
Boring Machine



Planer Type
Horizontal
Boring Machine



Hypro
Open-Side
Planer



Patented Electric Dial Feed — Easily adjustable over the HYPRO's wide feed range.

Positive Clamping — rail arranged with safety interlock so that it is always clamped for machining operations.

Massive Housings — provide stability for high-accuracy and chatter free operation under heavy cuts.

Dual Control — adjustments are convenient to operator at all times from either side of planer.

New HYPRO Cross Rail — permits independent use of either head for planing. Greater rail depth, plus added bearing surface of narrow guide section at rail base prevents tilting or binding of heads during heavy cuts.

Adjustable Voltage Planer Drive — double size driving motor for motor generator set insures adequate horsepower for future developments in carbide machining practice.

Vertical Balanced Table Drive — straight flow of power for steady rack reversals with no side thrust.

Pressure Lubrication — protects bed and table Vees bed bearings, table guides and all gearing.

Renewable Steel Inserts — for table slots — mean extra workpiece stability, better table condition throughout life of machine.

MACHINE TOOL CO.



Hypro Double Housing Planer



Hypro Vertical Boring and Turning Mill



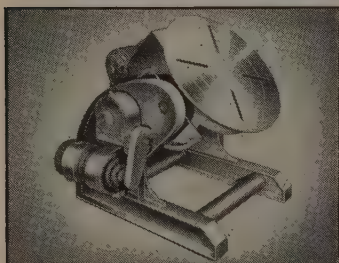
HYPRO

FOND DU LAC
WISCONSIN



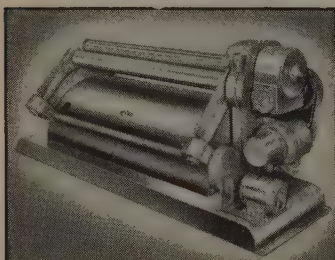
Modern Metalworking Equipment

- BENDING ROLLS
- TURNING ROLLS
- AUTOMATIC WELDING
FIXTURES



REED WELDING POSITIONER

- ★ Machined face with cast-in "T" slots
- ★ Machine Tool accuracy
- ★ 10-to-1 speed variation
- ★ Ball bearing work table mounting
- ★ 1000, 2500 lb. models, hand or power tilting
- ★ Rotating ground connection



REED PLATE BENDING ROLLS

- ★ In 18 models, ranging from 3 ft. x 10 ga. to 8 ft. x 1/4" in capacity
- ★ Rugged, all steel construction
- ★ Built-in, silent worm gear drive
- ★ Durable, special bronze bearings
- ★ Power adjustment & air drop end available on most models

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to write us for specifications, prices,
list of REED users near you. No obli-
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STEEL

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How Norton Brings *You* the

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GOLD**

**Adds more value to
every grinding job**

Grinding, the most universal, most basic of all production processes, is the true "Touch of Gold" that increases the usefulness — and the worth — of every manufactured article. That's what happens every time Norton grinding wheels touch the grinding jobs you do.

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HERE ARE THE FACTS on how Norton, as suppliers of the abrasives and abrasive products essential to every type of grinding, leads the field in volume, in variety, in facilities and in the constant research and pioneering that heighten the "Touch of Gold" for you and for all industry.

NORTON
ABRASIVES

Grinding better products to make other products better

"

NORTON CITY

World Headquarters for your

TOUCH OF GOLD

in Grinding

FIRST IN SIZE At "Norton City", the world's largest, most modern abrasive manufacturing center, you'll find over a mile of buildings and thousands of skilled workers. This big, bustling community ships out more abrasives and abrasive products, to all parts of the globe, than any other single source. Here also is located the newest and finest grinding machine plant ever built. And here, at the famous Norton School of Grinding, a constant stream of men — including many customers' em-

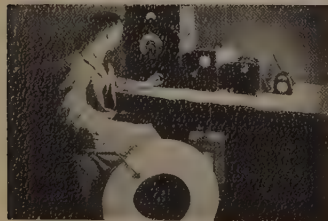
ployees — receive valuable instruction in every type of grinding wheel application.

FIRST IN RESEARCH Research is the driving spirit at Norton. Over 100 trained scientists and technicians, in 19 specialized laboratories, are constantly exploring every phase of abrasive product improvement and application. For the "Touch of Gold" that will solve your own grinding difficulties, look to the organization that leads all others in the number and value of original developments. Look to Norton!

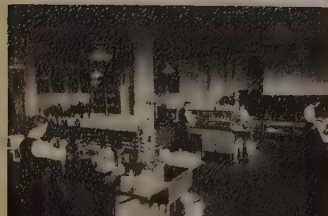
FROM NORTON RESEARCHES LIKE THESE... COME "TOUCH OF GOLD" EXCLUSIVES LIKE THESE



Abrasives and Bonds are microscopically examined under both plain and polarized light, in the Petrographic Laboratory.

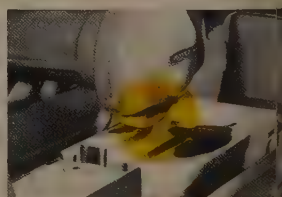


Musical Pitch, or "ring" of a wheel is measured in the Physical Chemistry Laboratory, to determine certain characteristics.



Constant Checking and testing of raw materials is one of the important functions of the Analytical Laboratory.

Norton New-Process Wheels are unequalled for uniform structure, identical performance and long, even wear.



32 ALUNDUM* Abrasive is a revolutionary Norton advancement. 32 ALUNDUM wheels cut both faster and cooler.



NORBIDE* Abrasive, hardest man-made material, replaces diamond dust in many lapping jobs, at fractional cost.





Norton Company Grinding Machine Division



FIRST IN PRODUCT VOLUME AND VARIETY

More Products for Better Grinding . . . More Grinding at Lower Cost

Norton offers you the widest choice of abrasive products — all manufactured to strictest quality standards — the quickest, surest way to the grind-results you want. Norton ALUNDUM abrasives and CRYSTOLON* abrasives, together with Norton-

developed bonds, make available hundreds of thousands of different grinding combinations, covering every known grinding requirement.

That's why you can always count on getting the right Norton wheels for every grinding job you do.

Make Sure
YOUR Grinding
Gets the Top
Value-Adding
MUCH OF GOLDTM
Norton Abrasive Products

ough Grinding • Surface
g • O. D. Grinding • Cut-
• Polishing and Lapping •
d Cutter Grinding • Internal
g • Disc Grinding • Die and
Grinding • Barrel Tumbling



NORTON
ABRASIVES

Making better products to make other products better

*Trade-Marks Reg. U. S. Pat. Off. and Foreign Countries

and NORTON is FIRST in SERVICE, TOO

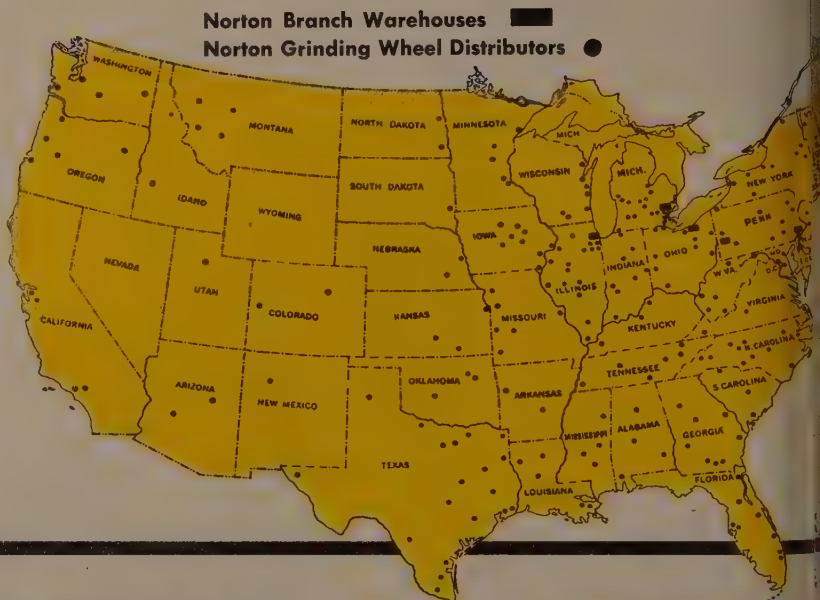
You've read how Norton makes exactly the wheels you need to put the cost-cutting, value-adding "Touch of Gold" into your grinding.

Here's how you can be sure of getting those wheels — whenever you want them, wherever you're located.

1. YOUR NORTON ABRASIVE ENGINEER is located conveniently near you. He's a trained technician, skilled in every detail of grinding wheel manufacture and application. And he's ready to go into your plant, study your grinding problems and help you find the money-making answers.

2. YOUR NORTON DISTRIBUTOR is your local, direct connecting link with the entire Norton organization. A topnotch, factory-trained grinding wheel man, with plenty of practical experience in everyday grinding problems, can give you valuable help in selecting the right Norton wheels. And you can always count on your Norton distributor for adequate stocks, selected to meet the particular needs of your area.

3. NORTON BRANCH WAREHOUSES located in Chicago, Cleveland, Detroit, Philadelphia, and Pittsburgh, are backed by the huge stocks at Worcester. Each of these stocks is a vital nerve center in the Norton distribution system — each is an additional guarantee that Norton Service matches Norton Engineering in bringing you the "Touch of Gold" that means more profitable grinding for you.



NORTON COMPANY

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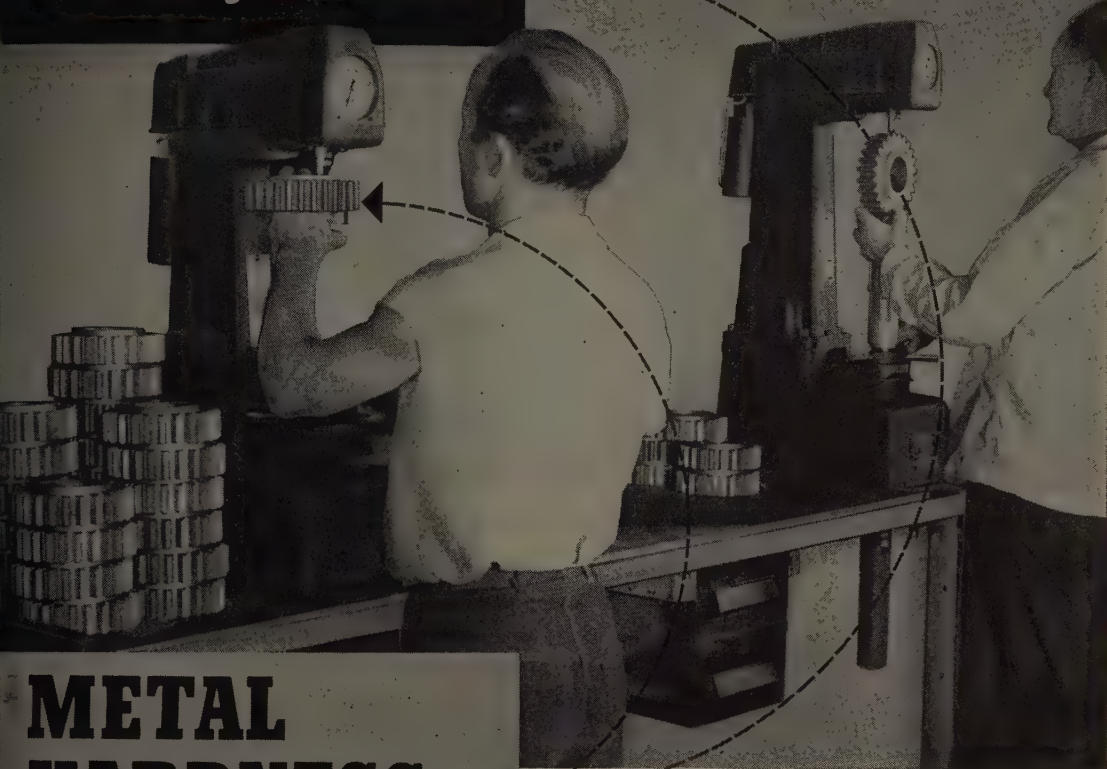
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NORTON
ABRASIVES

*Making better products
to make other products better*

*Checking Rockwell hardness of
both core and teeth on production run
of Brad Foote gears...*



METAL HARDNESS

- Upon the correct metal hardness rests the length of life you can expect from the gears you use. Good gear making consists of more than meets the eye. You can see a bad job of machining, but you can't see that the metal is too soft or too hard—until the gears give trouble.
- Here at BRAD FOOTE we make sure of metal hardness. We hold to extremely close tolerances checked carefully on the latest and best hardness-testing equipment. Nothing is left to chance, and no one shares our responsibility. So, when you buy BRAD FOOTE gears for your own use, or for use on equipment you make for others, you know that they will give long, satisfactory service.
- BRAD FOOTE makes every type of gear, out of any type of material. BRAD FOOTE makes speed reducers, gearmotors, transmissions, and intricate power units. We would like to discuss your requirements and make recommendations, or quote on your specifications. We'll give you prompt service.

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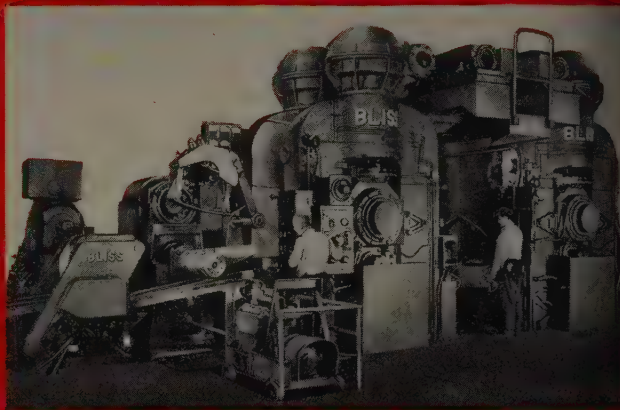


Whatever your metal-rolling job.

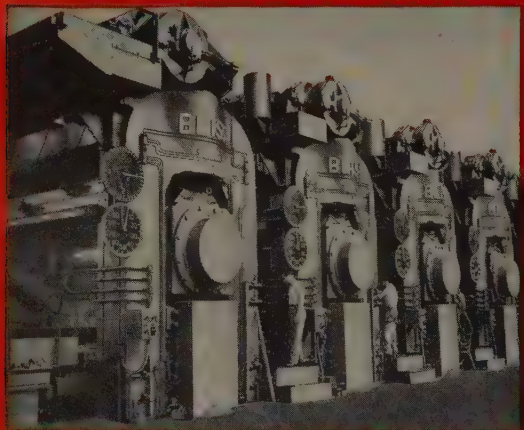
Hot Cold STEEL BRASS ALUMINUM



HOT-ROLLING STAINLESS • A Bliss 24", five-stand hot finishing train handles all the hot-rolling of stainless and "specialty" steels at Superior Steel Corporation. Since the thin stainless is slit into narrow strips, extreme accuracy and flatness are vital.



BRASS TANDEM • Brass and copper breakdown is the job of this Bliss four-high, two-stand tandem strip mill at the Springdale, Conn., plant of Stamford Rolling Mills Company. Bliss coiler, at far left, coils flat bars. Tension reel winds lighter-gage coils. A coil mandrel and elevator permit quick handling of heavy-gage coils.



HOT-ROLLING ALUMINUM • This five-stand, four-high 80" tandem mill hot-rolls aluminum sheet strip. Engineered and supplied complete by Bliss for a leading aluminum producer, this mill includes all necessary special auxiliaries such as roll brushers, guides and up coilers.



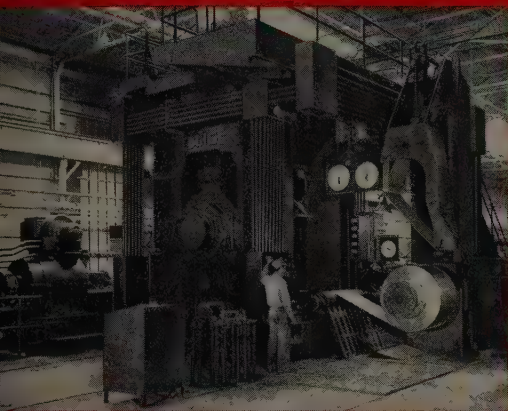
UP-CUT SHEAR LINE • Coiled steel is converted into uniformly flat sheet blanks at speeds up to 240 fpm by this shear line, designed by Bliss for Alan Wood Steel Company's 30" hot mill. The Bliss continuous shear line performs nine operations—from feeding to piling. It is suited for use in steel, brass and copper mills or fabricating plants.

Remember:

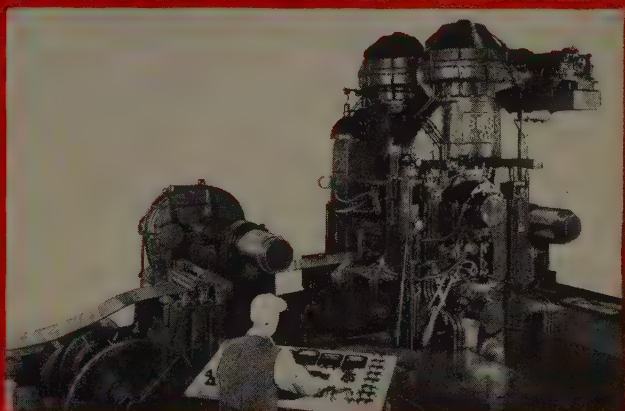
for Presses, ROLLING MILLS..

there's a **BLISS** mill to do it

..... Breakdown Rundown Finishing



STEEL TEMPER PASS • Bliss four-high temper-pass mill, installed at the South's leading steel plant, rolled a record tonnage of steel in eight hours. Here, it tempers 20-gage steel at 3500 fpm; handles 30- to 33-gage, 20" to 48" wide. It handles sheet stock coils up to 72" in diameter



FOUR-HIGH REVERSING • This four-high reversing cold reduction mill, specially designed by Bliss, proved to be the answer to the Greer Steel Company's "varied" requirements—a rugged, versatile mill to maintain exacting standards for quality of finish and accuracy of gage on short runs and quick changeovers.



COLD-ROLLING STAINLESS • The steel plant for whom Bliss built this three-stand, two-high mill reports a 30% average reduction in a single pass; accurate cold-rolling and finishing of stainless and special alloys within .0005" overall; 'round-the-clock operation at speeds up to 600 fpm.

For many, many years, the world's major metal-producing plants have specified Bliss rolling mills. Built for precision work at maximum speeds, Bliss mills take the abuse of continuous, high-speed operation with least possible maintenance.

Bliss builds a complete line of rolling mills and accessories for hot or cold rolling of ferrous or non-ferrous metals. Whatever your metal-rolling problem, you can look to Bliss for the right answer. Take



the first step by writing for the Bliss 52-page brochure, including an extensive range of rolling mill machinery and many useful pages of engineering tables.

E. W. BLISS COMPANY
General Office: Canton, Ohio
ROLLING MILL DIVISION: SALEM, OHIO

Branch offices in Chicago, Cleveland, Dayton, Detroit, Indianapolis, New Haven, New York, Philadelphia, Rochester, Toledo; and Toronto, Canada. West Coast Representatives: Moore Machinery Co., Los Angeles and San Francisco; Star Machinery Co., Seattle. Other dealers in United States cities and throughout the world.

and Special Machinery.....

IT'S BLISS

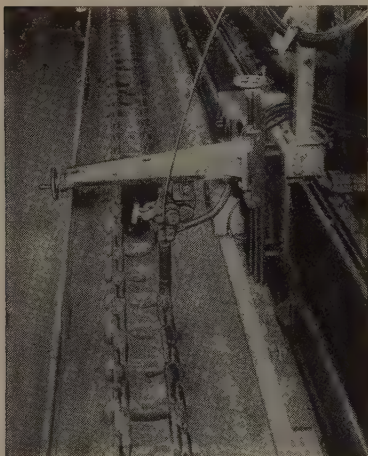


LINDE'S News of Metalworking

Worn Parts Rebuilt Economically by UNIONMELT Welding

Repair of worn tractor parts is most practical and economical with specially developed fixtures on which standard UNIONMELT welding units are mounted. The metal deposited by UNIONMELT welding is so smooth that no grinding or finishing is required. Experience indicates that resurfaced areas will wear as long as new parts.

The Berkeley "Conservall" fixture is designed especially for rebuilding crawler tractor track links or rails without disassembling them. The track is placed in a trough and clamped in position. A LINDE side-beam carriage



Tractor rail links rebuilt in "Conservall" machine by UNIONMELT welding. Cams automatically control welding action for each link.

moves the UNIONMELT welding equipment over the positioned track and the welding of each link is automatically started, stopped, and accurately controlled. Rollers, idlers, sheaves, and other circular work can also be welded or resurfaced on another section of the machine.

The "Leader" machine is also available for rebuilding both cylindrical and flat parts. Rollers are rebuilt on top of the machine. Larger parts, such as idlers, are mounted in the chuck at the side of the machine as shown. With the flat work attachment, parts such as disassembled track rail links, grousers, bulldozer blades, end bits and fabricated members can be resurfaced easily. This attachment is operated by a gear which is mounted in the chuck.



These tractor rollers and an idler were rebuilt at a speed of 30 in. per min. by UNIONMELT welding.

With both machines, the wheels can be tilted for rebuilding the flanges. It takes only 80 to 90 minutes to rebuild a D-8 track roller. Idlers take about three times as long.

OXWELD 1928 rod is normally used in making these repairs. When wear is excessive, OXWELD 296 rod is sometimes used for the initial buildup which is then finished with OXWELD 1928 rod. For such resurfacing, use either Grade 80 or Grade 90 UNIONMELT welding compositions.

For some services, a finishing pass with a higher alloy tube rod is applied to produce a harder surface. While material of almost any hardness can be applied, one combining hardness and toughness lasts longer than one of higher hardness that tends to spall and chip. As deposited, OXWELD 1928 material has a hardness of about Rockwell C-25, but in service the working

surfaces actually develop proper which cause them to outwear deposits that are substantially harder.

Advantages of UNIONMELT Build-up

UNIONMELT welded resurfacing is especially attractive with these automatic machines which readily permit deposit rates of 20 lbs. per hour. Savings in time and the advantages of smooth uniform deposit justify the initial investment in automatic equipment. Important in these times is conservation of metal realized with this process. The use of approximately one hundred pounds of weld metal saves replacement of 2,000 to 3,000 pounds of new parts.

LINDE's engineers and technicians will be glad to give further information about UNIONMELT welding. Telephone or write today.



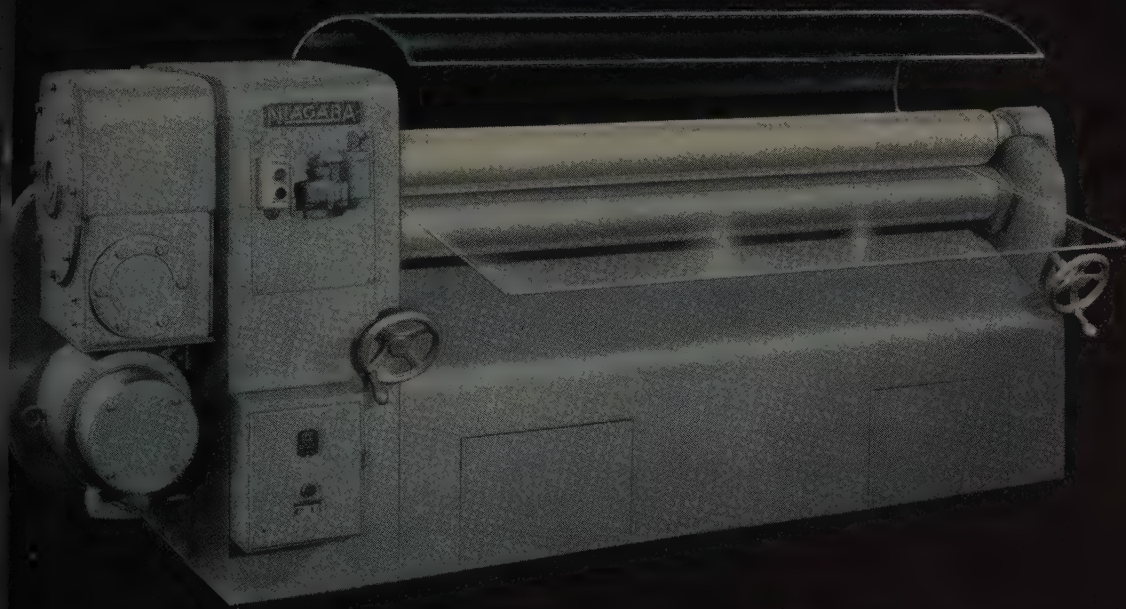
UNIONMELT welding head on "Leader" fixture rebuilds rollers and idlers. Rollers welded on top of the machine, idlers at side, and flat parts, depending on their size, can be welded on top of the machine or in the flat work attachment.

LINDE AIR PRODUCTS COMPANY
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street **UNION** New York 17, N.Y.
Offices in Other Principal Cities
In Canada: Dominion Oxygen Company, Limited, 110

The terms "Linde," "Oxweld," and "Unionmelt" are registered trade-marks of Union Carbide and Carbon Corporation.

NIAGARA

ANNOUNCES



steel BENDING ROLLS

6" Roll Series
Capacities 5/16"x 48";
16"x 72" and 12 ga x 120"

ite for new Bulletin 88

- ▶ Produces commercially true cylinders from thinnest sheets to maximum capacity.
- ▶ Rolls a multitude of bends in various shapes including oval forms, rectangular pipes, rounded end containers, cones etc.
- ▶ Pinch-type construction materially reduces flat spots on leading and trailing edges of work.
- ▶ All three rolls power driven permitting smaller diameters and easy operation with light gage sheets.
- ▶ Air operated drop end automatically tilts upper roll for easy removal of rolled cylinder.
- ▶ Power adjustment for rear roll saves time and effort.
- ▶ Roll position indicators allow operator to quickly duplicate roll settings for repeat jobs.
- ▶ Rapid reversal and positive jogging of rolls gives operator accurate control at all times.
- ▶ Magnetic brake on main motor prevents "drifting" of work, enabling operator to do accurate work without guessing.
- ▶ Unbreakable steel construction. ▶ No special foundation required.

NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y.
America's Most Complete Line of Presses, Shears, Machines and Tools for Sheet Metal Work
DISTRICT OFFICES: DETROIT • CLEVELAND • NEW YORK • PHILADELPHIA

Dealers in principal U. S. cities and major foreign countries

a few words about alloy steels



or... **$3 \times 3 = 1$**

one best answer to your alloy steel problem . . . one best answer supplied by the 3 members of Republic's 3-Dimensional Metallurgical Service . . . the Field, the Mill, and the Laboratory Metallurgists . . . after looking at your problem from 3 angles . . .

First, what alloy steel or alternate grade will be best for your product . . . *second*, how to process the alloy selected on your present equipment . . . *third*, how to make the product best at lowest cost.

See what we mean by $3 \times 3 = 1$, when Republic 3-Dimensional Metallurgical Service supplies the answer? A call to your Republic Sales Office will bring a Republic Field Metallurgist to hear your question.

REPUBLIC STEEL CORPORATION

Alloy Steel Division • Massillon, Ohio

GENERAL OFFICES

CLEVELAND 1, OHIO

Export Department: Chrysler Building, New York 17, N.Y.



Republic
ALLOY STEELS



Other Republic Products include Carbon and Stainless Steels—Sheets, Strip, Plates, Pipe, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing

Why LINK-BELT belt conveyors are first choice in so many steel mills . . .

LINK-BELT engineering experience plus quality components combine to reduce handling costs

In steel mills everywhere, Link-Belt is first choice in belt conveyors. Whether your job is large or small, Link-Belt can apply unequalled engineering experience to meet the conditions of your particular bulk handling requirements.

Link-Belt builds a complete line of quality components. Our conveyor engineers can choose from all types and sizes of idlers, trippers and terminal machinery to match exact requirements.

Link-Belt can also supply all related equipment—other types of conveyors, feeders, elevators, car chutes and shakers. And Link-Belt will build your supporting structures and enclosures . . . install the job completely if desired.

Link-Belt will gladly work with your engineers, consultants and holders of mill and process equipment. Get in touch with your nearest Link-Belt office.



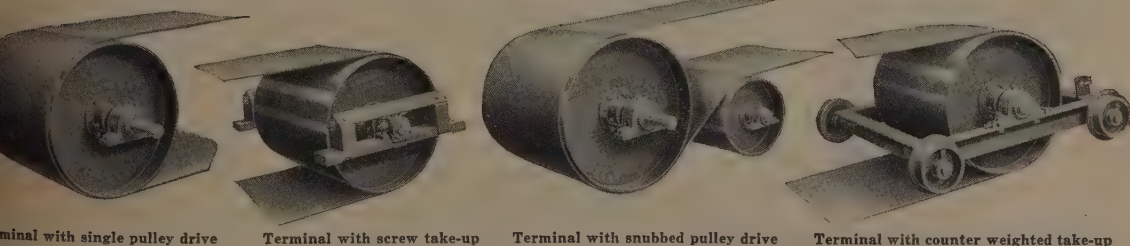
12,747-F

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Boston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices: Principal Cities.

Magnetite ore is carried to the crushing plant on this 1500 ft. long belt conveyor equipped with 48 in. wide Link-Belt roller bearing idlers.

LINK-BELT
Belt Conveyor Equipment

LINK-BELT Pre-Selected Terminals—the right equipment for every requirement



Terminal with single pulley drive

Terminal with screw take-up

Terminal with snubbed pulley drive

Terminal with counter weighted take-up



Photo courtesy of Woodall Industries, Inc.

A stitch in metal saves *plenty!*

STITCHING with wire is a relatively new way of joining metal to metal, or metal to almost any other material. Since speeds up to 100 stitches a minute are possible . . . and since wire is economical . . . there are tremendous time-and-cost savings compared with other methods of fabrication.

Success of the whole idea hinges largely on special wire. For the wire must be *stiff* to penetrate metal. It has to be *strong*, up to

330,000 psi in tensile strength, to provide a lasting grip. Still it must be *ductile* to take tight 180° bends without cracking or breaking.

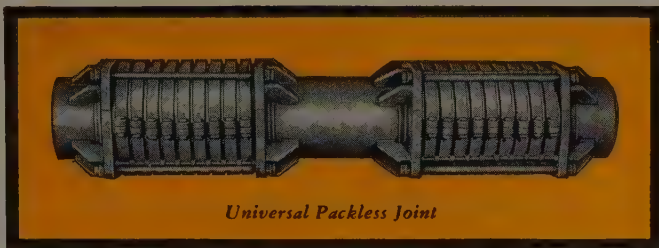
Here, at our Worcester Wire Works Division, this unusual wire is produced in several strengths, sizes and finishes to meet all metal stitching requirements perfectly! Here too, the skill and care for which Worcester Wire Works has long been known result in exceptional uniformity—a particularly great advantage for any user of machine-fed wire.

Do you have a problem involving wire? Perhaps, as in metal stitching, a new, specially developed wire is the answer. Maybe you need only some specialized engineering help on the use or fabrication of wire. In any case, Worcester Wire Works stands ready to serve you, to give you the advantage of engineering experience, special skills and techniques that have been over 30 years in the making. It's your standing invitation to out-of-the-ordinary, personalized service in wire.



DIVISIONS OF NATIONAL-STANDARD CO.

ATHENIA STEEL.. Clifton, N. J.....	Flat, High Carbon, Cold Rolled Spring Steel
NATIONAL-STANDARD.. Niles, Mich.....	Tire Wire, Stainless, Fabricated Braids and Taps
REYNOLDS WIRE.. Dixon, Illinois.....	Industrial Wire Cloth
WAGNER LITHO MACHINERY.. Jersey City, N. J.....	Metal Decorating Equipment
WORCESTER WIRE WORKS.. Worcester, Mass.....	Round and Shaped Steel Wire, Small Sizes

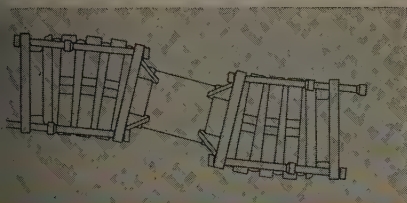


Universal Packless Joint

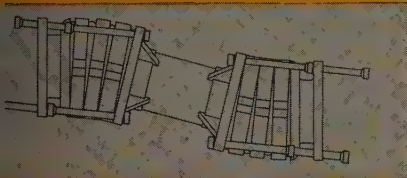
ADSCO

Joint

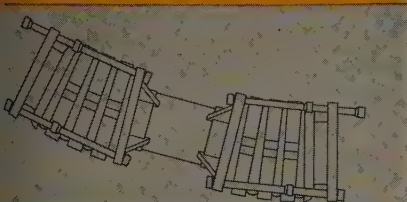
...THE UNIVERSAL FAVORITE



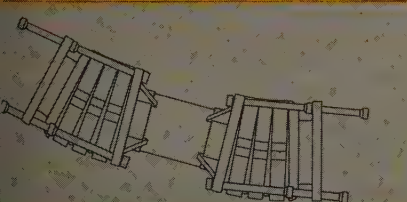
1. Absorbing lateral movement only.



2. Absorbing combined axial and lateral motion.



3. Angular rotation without axial motion.



4. Combined angular and axial motion.

● When it comes to expansion joints, ADSCO is the universal favorite because ADSCO — and only ADSCO — makes a complete line of joints, both slip and packless.

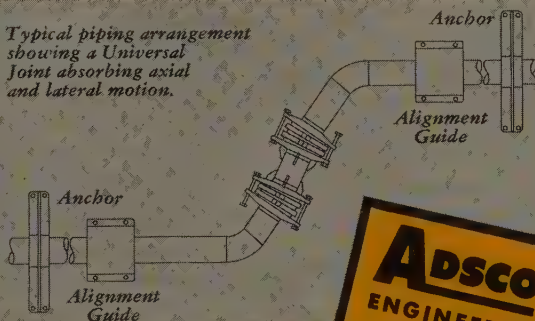
And if your problem is to absorb pipe line movement in all planes simultaneously, ADSCO Universal Packless Joints are the favorite . . . Often it is impossible or impractical to eliminate lateral motion or to isolate lateral from axial motion by anchors and guides. In these circumstances, the Universal Joint will reduce the number of anchors required and consequently reduce the amount of steel work necessary to support them. In Drawing 1 at the left, the Universal Joint is shown absorbing lateral movement only. By lengthening the intermediate pipe nipple the amount of lateral movement can be increased without increasing the number of corrugations. In this joint the tie rods take the place of anchors. In Drawing 2, the same joint is absorbing combined axial and lateral motion. Drawing 3 illustrates the joint in angular rotation without axial motion. Here again tie rods take the place of anchors. Drawing 4 shows combined angular and axial motion.

ADSCO can solve *any* of your pipe expansion problems. Call your ADSCO representative or write for Bulletin 35-51A.



● For best results, use ADSCO Pipe Alignment Guides.

● Typical piping arrangement showing a Universal Joint absorbing axial and lateral motion.




EXPANSION JOINTS • HEAT EXCHANGERS • STEAM TRAPS • STRAINERS • SEPARATORS • METERS

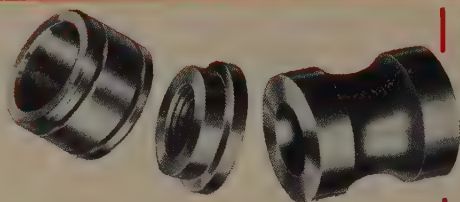
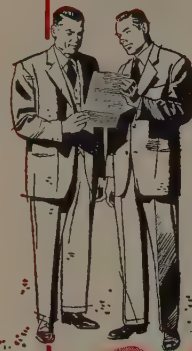
AMERICAN DISTRICT STEAM COMPANY, INC.

NORTH TONAWANDA, NEW YORK

Since 1877



**profits
come out of
this close-
tolerance
tubing**



**ROCKRITE saves more
than any other tubing**

- Higher cutting speeds
- Tools last longer between grinds
- Work-surface finishes are better
- Machined parts have closer tolerance
- Stations on automatics are often released for additional operations
- Extra-long pieces available — less downtime for magazine stocking and fewer scrap ends
- Closer tolerances often eliminate necessity for machining on outside or inside

Substantial savings are available to manufacturers who make ring-shaped and cylindrical parts of steel and certain non-ferrous metals. Machine-production of such parts has been doubled, total costs cut in half, and tonnage of steel purchased—in the form of tubing—reduced by some fifty per cent. All because Rockrite Tubing is sized by a totally different method—to dimensional accuracy very much closer than that considered standard.

Learn more about how close-tolerance Rockrite Tubing can step up your production, step down your steel requirements for quantity production of ring-shaped and cylindrical parts. Bulletin R2 tells the full metal-saving story. Write for your copy today.

Rockrite® cold rolled precision tubing is made only by Tube Reducing Corporation, the originator of the precision reducing process. You benefit by unequalled quality control methods.

*REG. U. S. PAT. OFF.



TUBE REDUCING CORP.

Wallington, New Jersey

DELTA
MILWAUKEE

QUALITY MAKES THE DIFFERENCE

Delta drill presses work interchangeably on several materials. Additional machines, set up ready for use, can be moved in and out of the line. Simple fixtures and Delta accuracy make jobs practically fool proof. Machines that almost "run themselves."

Down Go Costs

WHEN ASTATIC CORP. PUTS DELTA TOOLS ON JOB

These Production Ideas Will Work for You, Too !

As how the Astatic Corp., Conneaut, O., manufacturer of microphones, radio, phonograph and television parts, achieves high production and high precision at low cost with a full line of Delta tools—drill presses, grinders, metal cutting saws, and abrasive finishing machines.

EXIBILITY—

Because Delta tools are light and mobile, Astatic takes them to the material, cutting handling costs; moves them, easily set up, in and out of the production line as jobs change. Five different materials from steel to plastics are finished on the same Delta tools.

INTERCHANGEABILITY—

Standardizing on Delta, Astatic uses the same jigs and fixtures on several machines without adjustments.

POWER SET-UPS—

Keeping machines set up for special jobs, one operator

can tend several machines and do sequence operations. No waste motion. Because Delta tools are a low capital investment, they don't have to run constantly to pay out.

QUALITY—

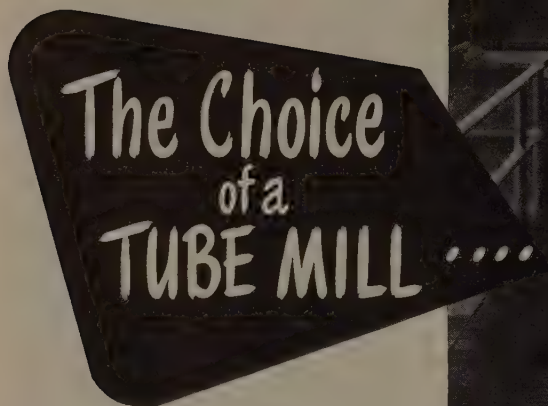
Most of the Delta tools at Astatic have been on the job six to nine years with only routine maintenance—proving that Delta gives you machine tool quality at a cost any production operation in your plant will justify.

Do you have an up-to-date catalog of Delta tools? Call your Delta dealer. He's listed in your Classified Phone Book under "Tools", or write for Catalog AB, Delta Power Tool Division, Rockwell Manufacturing Company, 638A N. Lexington Ave., Pittsburgh 8, Pa.

DELTA QUALITY POWER TOOLS
Another Product by **Rockwell**



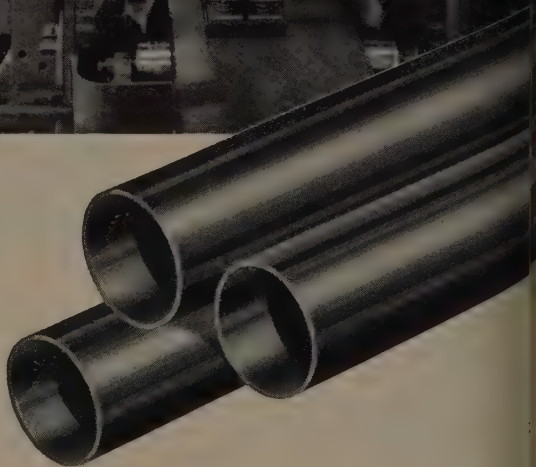
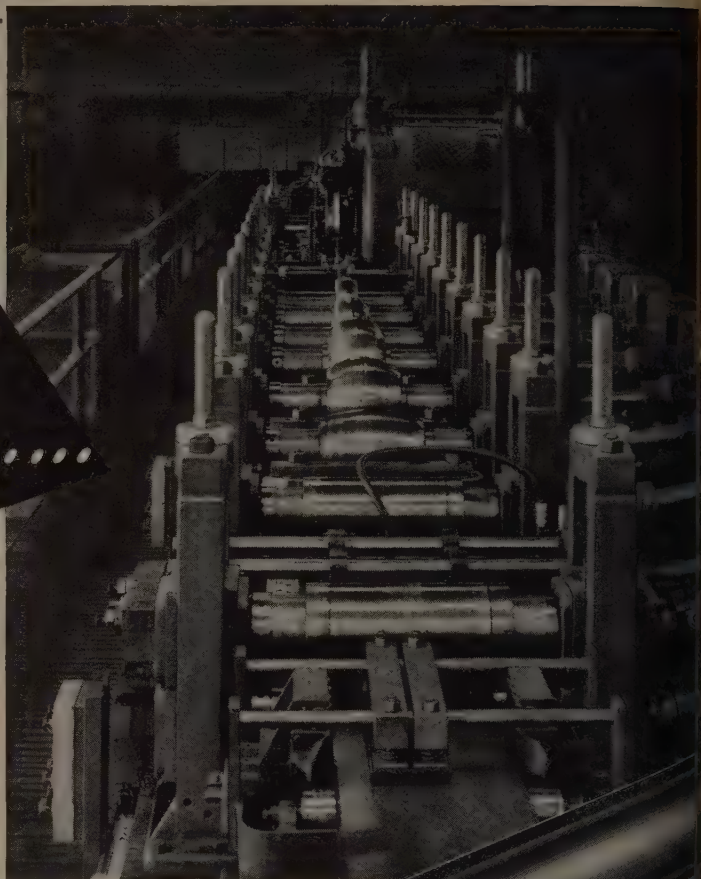
One of several YODER TUBE MILLS recently installed by leading
Auto Manufacturers —



may be governed by a great many factors such as first cost, operating cost, speed, capacity, power consumption, etc. Mechanical and electrical features of the tube forming, sizing and welding units in themselves must be carefully examined. However, no matter how necessary or important all such details may be—or how effectively they may be presented—the most convincing proof of superiority is obtained by a comparison of tonnage production, consistently maintained over the years, of high quality tubes.

Fortunately, most electric weld tube mills are chosen that way. This fact, above all others, explains why the vast majority of such mills installed in the U.S.A. are built by Yoder.

List of Yoder tube mill installations sent on request. Also literature discussing the economics as well as the mechanics of tube making.



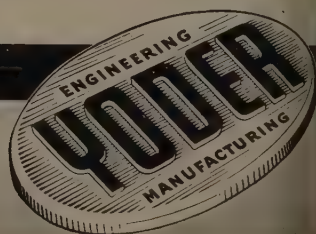
THE YODER COMPANY

5502 Walworth Avenue

Cleveland 2, Ohio

Complete Production Lines

- ★ COLD-ROLL-FORMING and auxiliary machinery
- ★ GANG SLITTING LINES for Coils and Sheets
- ★ PIPE and TUBE MILLS—cold forming and welding



Case No. 42 Kemp Immersion Heating Gets Top Results for Signode Steel Strapping Company



At Signode Steel Strapping Co. tempers 650 feet of steel strap every minute

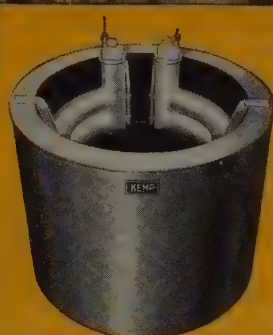
At the Signode plant in Sparrows Point, turning out up to a thousand miles of strap daily calls for fast, efficient production line techniques. One highly important phase in the final processing is the tempering bath. Here, Signode called on Kemp Engineers to supply the 15 ton, gas-fired Immersion Melting Pot shown here. Now steel strap is uniformly tempered at the rate of 650 feet per minute.

Kemp Offers More Advantages
Installing Kemp Immersion Heating, Signode benefits in many ways. Unlike gas-fired pots, Kemp pots are *not* subject to periodic and expensive shutdowns . . . they don't crack or break. They operate con-

tinuously at maximum heating efficiency with a *substantial* savings in fuel costs. Offer a greater heating surface, faster heat recovery, lower dross formation, even lower room temperatures. At the same time, this Kemp unit enables Signode to eliminate costly temperature override and open flame fire hazards.

Let Kemp Solve Your Problems

These same advantages apply to all types of melting or heating operations. Whether you are engaged in tempering, annealing, descaling, coating, etc., you can rely on Kemp Immersion Heating. Why not find out how Kemp Engineers can help you, save you money?

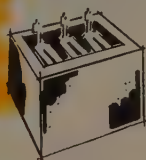


This 10 ton oval pot is typical of the many Kemp installations now in use. Features Kemp Carburetor, part of all Kemp equipment, to deliver complete combustion . . . without waste . . . without tinkering. One-pipe air and fuel feed reduces installation costs, simplifies maintenance.

For more complete facts and technical information, write for Bulletin IE 11 to: C. M. KEMP MFG. CO., 405 East Oliver St., Baltimore 2, Maryland.

KEMP OF BALTIMORE

IMMERSION MELTING POTS



CARBURETORS • BURNERS • FIRE CHECKS
ATMOSPHERE & INERT GAS GENERATORS
ADSORPTIVE DRYERS • SINGING EQUIPMENT



GENERAL-PURPOSE

CONTROL



1/2 hp motor starter



1-7 1/2 hp manual motor starters



A-c magnetic motor starter

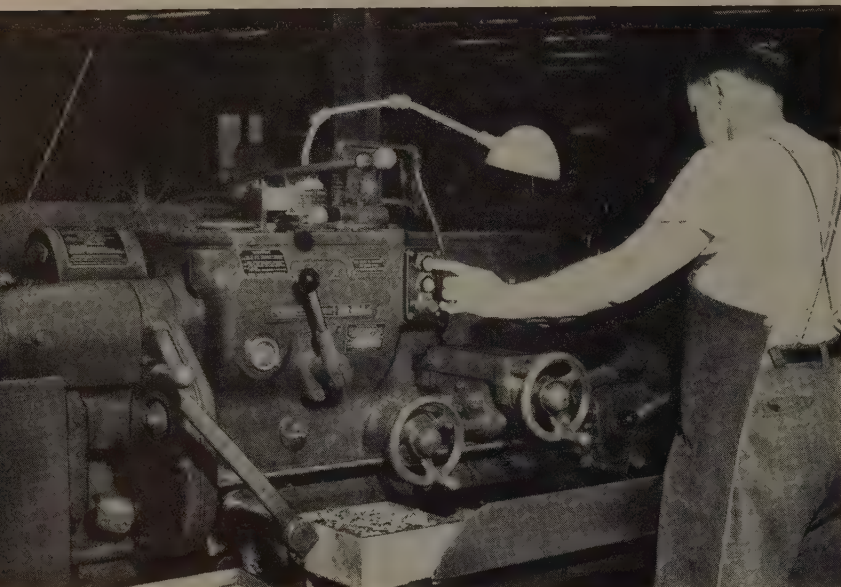


Combination motor starter



Reversing motor starter

New G-E Oil-tight Units — Modern Design for Modern Machines



Machine operation is easier with these G-E units that retain color identification under continual use

An entirely new concept of push-button design means greater flexibility, installation, and longer life of these units on your machines.

VARIETY OF FORMS AVAILABLE

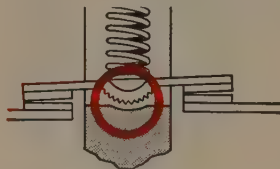
Interchangeable rings are available in five colors—will fit both push-button and selector switch forms. No need to order complete units to get a special color. Operators are available with extra large button, mushroom head, locking attachment, cylinder lock, and in combination units in addition to the standard push-button and selector switch forms.

One basic form of contact block fits these operators; is attached by means of two screws. You save time and money in ordering or making up the forms you need.

COMPACT ENCLOSURES

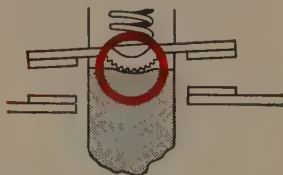
In stations or enclosures these units are back mounted—simplifying wiring, making a neat arrangement. Stationary units designed in accordance with JIC specifications are of strong, lightweight cast aluminum with a Buna-N gasket to keep out oil, water, and coolant.

G-E SELF-A-LINE CONTACTS



ON MAKE:

When stationary contacts are misaligned movable contacts align with them.



ON BREAK:

Contacts always break evenly regardless of any misalignment of stationary contacts.

Wear is distributed evenly over both contact surfaces. Result: a 2:1 increase in life—by actual load-life tests.

LONG ELECTRICAL LIFE:

Unique self-a-line contacts assure equal distribution of arcing on the double-break contacts which prevents excessive and cumulative burning of the tips. Wipe on both normally open and normally closed contacts prevents false operation under vibration. Arc-resistant melamine contact block has long life.

ATTRACTIVE, BUT PRACTICAL:

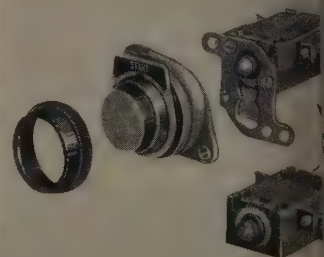
Color stays clean and bright because it's anodized in the ring, and around the button away from area of use. Color coding can be seen from the side as well as the front. Smooth, rounded contour blends with modern machine design. Standard or extra-large nameplates available for all forms.

EASILY INSTALLED:

Contact blocks, operators and color rings can be assembled with little effort. Wiring is simple. Large pan-head No. 8 screws with terminal clamps easily take No. 12 wire and cannot be twisted off when tightened. Screw will also take solderless-type lugs. Only normal hand tightening is required to make unit oil-tight because of a special washer.

BUILDING BLOCK CONSTRUCTION

The same basic contact block is used on all push-buttons and selector switches. Double-pole, double-throw combinations are made by mounting two blocks on same base. Tandem combinations of four contact blocks are easily made using an adapter plate. Write for Bulletin GEA-5779, General Electric Company, Schenectady, N. Y.



Inventory is reduced with these G-E units. They have interchangeable color rings, separate operators, and one basic form of contact block.

Reduced voltage starter



Heavy and standard-duty push-button stations



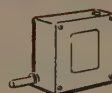
General-purpose relay



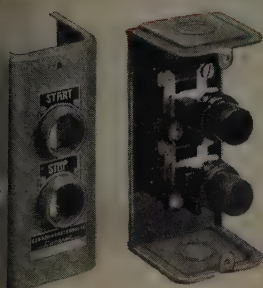
A-c and d-c solenoids



Roller-lever type limit switch

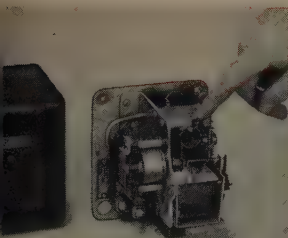


Rotating-type limit switch



TY PUSH-BUTTON STATIONS ARE ION RESISTANT—LONG LIVED

ed in a strong steel case, G-E
ty units have silver-tipped con-
h strong springs that stand up
stant vibration and use. Many
ions are possible with momen-
1 maintained-contact buttons,
switches, and indicating lights.
s are large for easy wiring. Large
ncircled by guard rings prevent
1 operation. Surface and flush-
stations available. Bulletin
3 describes all forms.

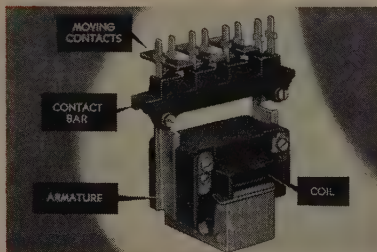


E TIMING WITH THIS RELAY— STEPLESS ADJUSTMENT

rocess timing this relay has a re-
uracy of 0.5 per cent of maximum
ting. Four forms available for
ges of 3 to 100 seconds up to 12
to 6½ hours. Synchronous motor
Switch has both an instantaneous
e open/time closed contact. For
ormation on this easily adjusted
elay write for Bulletin GEC-600.

STRONGBOX COIL MEANS EXTRA LONG LIFE FOR G-E MAGNETIC MOTOR STARTERS

This unique plastic-encased coil resists moisture, dust, and oil—cannot be damaged by a slipping screwdriver during wiring and installation. Permafil varnish, which does not liquefy in heat, prevents windings of Formex* magnet wire from abrasion under vibration and is sealed under vacuum so no "hot spots" can develop.*

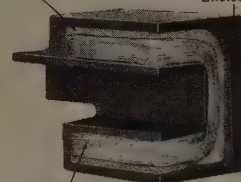


Coil acts as permanently lubricated guide to moving magnet. No metal-to-metal friction.

*Reg. trade-mark of General Electric Co.

Sand Bonded with Permafil Varnish

Plastic Enclosure



Layers of Formex Wire and Paper

G-E Strongbox magnet coil has windings en-
cased in molded plastic to prevent damage from
vibration, moisture, dust, and screwdrivers.

*The grooved sides of the plastic en-
closure serve as guides to the moving
magnet armature. A lubricant impreg-
nated in the block reduces friction for
fast, easy action at all times. There is no
rubbing of metal against metal, so wear
is reduced. Positive "make" and "break".*



Wiring is easy. When the screw is backed off
to make room for insertion of the wire, the
clamps and lockwasher follow the screw head.

*Coils are easily interchanged, come in
ratings of 110, 220, 440, 550, and 600
volts. Simply remove four easy-to-reach
screws, and the coil slips out over the
stationary magnet. Design is simple,
compact. Coil terminals are front-con-
nected, clamp-type—solidly anchored in
the plastic enclosure—will not twist loose
when tightened on the wire.*

*Ask for the starter with the Strongbox
coil—it's an exclusive feature of all G-E
a-c full-voltage magnetic starters in
NEMA Sizes 0 through 3 for one to 50 hp
motors. Write for Bulletin GEC-880.*

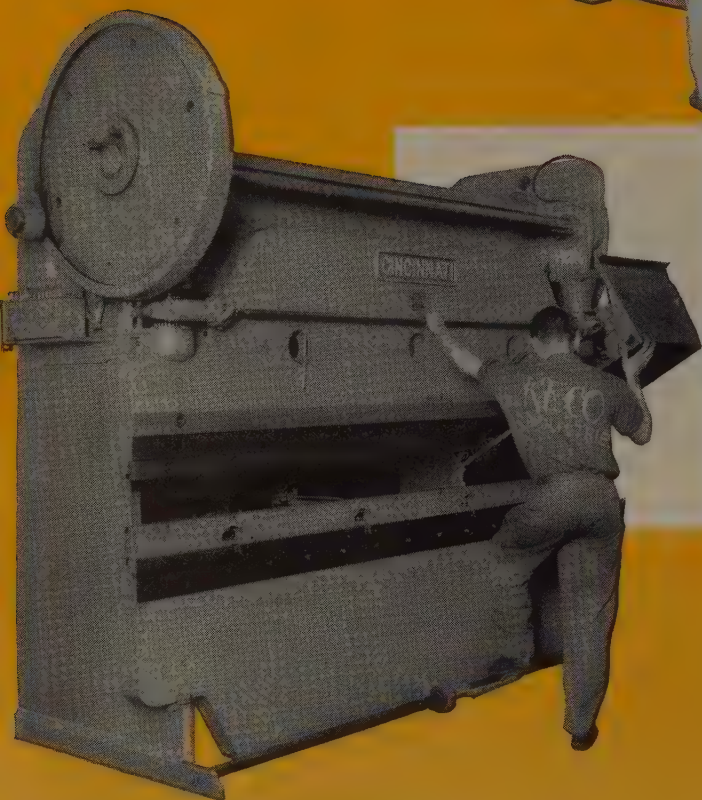
FRACTIONAL-HP MOTOR STARTERS HAVE EXTRA PROTECTION FEATURES

Bi-metallic overload relays take a va-
riety of heater sizes—tab in operating
handle quickly identifies rating. On over-
load, handle moves to OFF for position
indication. Protection to contacts and
overload relay is provided by a plastic
enclosure within the steel case. The outer
case has four ½-inch and two combina-
tion knockouts for easy mounting. Write
for Bulletin GEA-2234.



Information contact your nearest G-E representative, agent, or distributor or write Section B 730-43, General Electric Co., Schenectady 5, N. Y.

3 times
as fast...



with this
CINCINNATI
team



Cooling towers for portable air conditioning units

*Photographs courtesy of the Keco Industries,
Cincinnati 25, Ohio*

The floor-to-floor time consumed in shearing and forming panels for air-conditioning units, was cut from 12 minutes to 4 minutes at Keco Industries, using a Cincinnati Brake and a Cincinnati Shear.

Accuracy and rapid handling effected these savings.

In your shop, there may be opportunity for real costs reductions. Investigate Cincinnati Shears and Cincinnati Press Brakes.

Write for Cincinnati Shear Catalog S-6 and Cincinnati Brake Catalog B-3.



THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A.

SHAPERS • SHEARS • BRAKES

January 19, 1953

A Plan for Materials Decontrol

One of the first reports to reach Sinclair Weeks when he is officially on the job as secretary of commerce will be NPA and DPA recommendations on materials decontrol. The final study will probably recommend shelving the present CMP on July 1 and replacing it with a little CMP which would open-end steel, copper and aluminum except for priority assistance for direct military requirements, AEC needs and a few other programs.

Wages, Prices: No Advice

ODM Director Henry Fowler will allow no such specific recommendations to be made about wage and price decontrol. He is not happy at the way the White House meddled in those affairs even during his short tenure. He's going to remain quiet on those subjects and leave the problem strictly to the judgment of the new administration and the 83rd Congress. That's despite the numerous last-minute public pleas by OPS Boss Mike DiSalle to extend curbs beyond the present Apr. 30 expiration date.

Matter of Momentum

How soon can General Eisenhower and his staff get the wheels turning again? Activity in the defense agencies ground to a virtual halt last week and won't get going again until the new President makes basic decisions about decontrol, military procurement and many other matters. Lame-duck officials claim that even buying of some vital defense items will stop unless decisions are made by Feb. 1. As it looks now, few major decisions can be expected before mid-February.

\$500 Million for Mobilization Base?

Action by Congress in approving President Truman's budget request for \$500 million to create a mobilization reserve capacity "beyond current needs" would fill an important gap in the present powers of defense agencies. (For other aspects of the mobilization base problem, see p. 50). Whereas the defense agencies now have the power to procure machine tools and other industrial equipment for defense production, they do not have the authority, now possessed by the armed services, to spend government money for buildings for defense production. The \$500 million request would give them that power.

The Last Word

Mr. Truman's last presidential message to Congress was an estimate that the nation would experience high levels of prosperity this year, but that we could hit economic storms further ahead, especially if the nation doesn't follow some of his policies and programs. Taking his figures from the annual review by the Council of Economic Advisers, Mr. Truman predicted that the nation could turn out \$475 billion

METALWORKING
OUTLOOK M

to \$500 billion in goods and services a decade from now, a gain of 40 per cent over present output measured in current prices.

Problems of Payment

The military stretch-out is bringing payment difficulties to many firms, especially smaller ones. Subcontractors who have already delivered items to companies holding prime orders on schedules that have been revised find trouble in getting their money. That's still another headache for which the new administration must find aspirin.

Industrial Trucks: Leased and Sold

The trend to lease, instead of sell, the more expensive capital equipment is gaining momentum. Yale & Towne Mfg. Co. and Automatic Transportation Co. have both just worked out plans to lease their industrial trucks through C.I.T. Corp., the industrial financing subsidiary of C.I.T. Financial Corp. Both manufacturing firms also have corollary plans for users of their equipment who wish to purchase it on installment terms rather than lease.

Shortage of Management Men

DuPont President Crawford H. Greenewalt says that growth in size and complexity of industry has resulted in a new profession, business management. But a pressing shortage of personnel for that profession threatens the future development of the country. He believes that new methods must be developed to get such personnel and to train them (p. 56). A difficulty in luring men into business management, in his opinion, is the current income tax situation.

Straws in the Wind

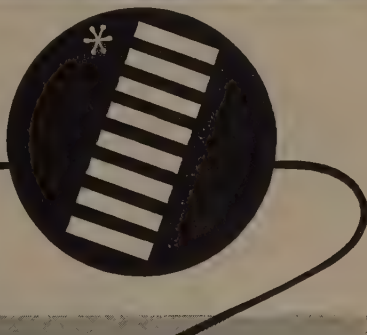
Pennsylvania Coal & Coke Co. has found a coal deposit in eastern Kentucky which produces coal ash rich in germanium, the rare metal with important electronic-controlling properties . . . Most members of the House Ways & Means committee predict the excess profits tax will be allowed to die June 30, and Rep. Daniel Reed (Rep., N.Y.) has introduced a bill to pare individual income taxes starting July 1. . . . Part of the new 2-million square foot, Navy-owned, Chrysler-operated jet engine plant in north Detroit will be used for guided missile research and development work . . . Increase in the J-40 jet engine contract between the Navy and Lincoln-Mercury Division of Ford Motor Co. will carry that engine's production well into 1955.

What Industry Is Doing

The probable labor picture for 1953: Few big strikes, many small ones, no pattern-making wage settlement (p. 45) . . . Makers of industrial furnaces are grappling with a severe manpower shortage (p. 46) . . . We are on the threshold of a new and mighty era in materials, power sources and fuels, is the consensus at the annual meeting of the Society of Automotive Engineers in Detroit (p. 47) . . . The future is bright for makers of light-duty circuit breakers (p. 48) . . . Sales of air valves reached a record \$150 million in 1952 (p. 49) . . . American Iron & Steel Institute reports 93.1 million net tons of ingots were turned out in 1952, the third best year on record.

**No. 9A MARVEL
Production Saws
Capacity 10" x 10"**

**No. 6A MARVEL
Production Saws
Capacity 6" x 6"**



Eight of these MARVEL 9A Saws have already earned *Service Stripes**

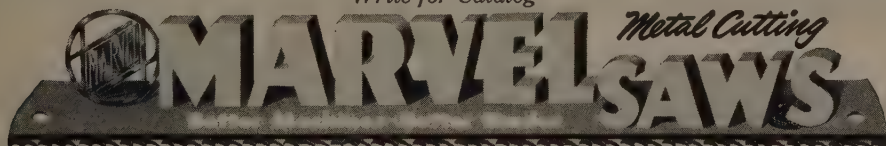
Eight of these high speed MARVEL Production Sawing Machines at the Accuracy Steel Cutting Company, Hazel Park, Michigan, (a suburb of Detroit) operated almost continuously thruout the last war—cut up thousands of 20 ft. bars into accurate slices, pieces and lengths, for war production.

Now with a battery of fifteen of these world's fastest hack saws, Accuracy Steel Cutting Company has immense capacity to put behind defense and civilian work.

MARVEL Production Saws will automatically cut bar stock to size at terrific speed . . . they will feed, measure and accurately cut-off identical pieces from single or nested bars *automatically*, with no more operator attention than a battery of automatic screw machines.

Versatile, as well as accurate and fast, these saws can be stopped at any point in a production run—a miscellaneous cut made—and production resumed by simply re-engaging the automatic bar push up.

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"S H · R I P" That's our pet name
for Sheet Steel cut into Strip widths, in
coils or otherwise. Any Reliance
"Dan" will gladly explain the difference.
He'll also tell you about
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If you make stampings, tubing or roll-formed shapes, then perhaps you'll say "amen" to one stamping plant operator's version of variables in the pressed metal business:

"Life is just one pain-in-the-neck after another, licking variables in steels, tools and dies, machines, set-ups, even lubricants."

Dies, machines, lubricants, etc. are out of our line. But on steel, we'll do the best we know how to select and supply as uniform a product as we have. That includes thickness, temper and also finish (when a factor). It applies to Hot Rolled and Cold Rolled Sheets as well as to Cold Rolled Steel Strip.

Accuracy and uniformity in steel depend on the Tolerance Standards applicable to each product. For example, in Strip*, the leeway for thickness is only about half of what's allowed, say, for Sheets. In Strip, you also have a freer choice of temper (graduated from soft to hard). And in surface quality, it's either bright or "satin"—and consistently so.

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January 19, 1953

The Hard Way

Tomorrow's inauguration in Washington will be significant. It will be the first time in 24 years that the oath of office has been taken by a Republican President.

When President Hoover was inaugurated in 1929 the nation was enjoying prosperity. When depression hit, months later, Mr. Hoover and his party held to the belief that the powers of the federal government in respect to relief were limited. The depression became more severe and more prolonged than had been anticipated. Failure of the Republicans to meet this challenge squarely caused them to lose out in the elections of 1932.

Tomorrow General Eisenhower will take the oath of office as the 33rd President. He, too, begins his term in a period of prosperity, but there is a marked difference. In 1929 few persons detected clouds on the economic horizon. Today everybody knows that current prosperity is buoyed by defense requirements and inflation. Most persons realize that as defense expenditures decline support from other sources must be forthcoming; otherwise there will be a recession.

Ike and his associates know that if a serious depression occurs during their administration, their goose is cooked. They know they must maintain a reasonable degree of economic stability. They have pledged themselves to do it the hard way.

The easy way would be to continue the new deal and fair deal policy of borrowing from the future and relying upon wars and other crises to provide prosperity. This policy served the Roosevelt and Truman administrations admirably, but at a cost to the nation of an increase of \$246 billion in the national debt, exorbitant taxes over extended periods and a loss of 49.6 cents in the purchasing power of the dollar. Despite this colossal cost, no acceptable cure for depression was found.

Ike and his teammates will try to develop economic stability on a sound basis. They seek methods whereby the American economic structure can stand on its own feet, without the support of war and without leaning upon the crutches of government assistance indefinitely. Should they succeed, they will have extended the horizons of opportunity for American enterprise tremendously.

EDITOR-IN-CHIEF

RETURN TO BARGAINING: Among those who are speculating as to what turn labor relations will take in 1953, there is a feeling that most of the negotiating will be between employers and the unions and that the federal gov-

ernment will not attempt to meddle. President-elect Eisenhower is not anti-labor and most of the members of his cabinet are fair-minded in disputes between employer and employees.

At the outset, at least, it is likely that the

new administration will be disposed to encourage a return to real collective bargaining, wherein the two principals sit around a table and try to resolve their differences without the aid or hindrance of a representative of the government. If the government is forced to intervene, it certainly will not act as a business agent for the union, as Mr. Truman so often did.

* * *

WELCOME REFINEMENT: In scanning the pages of this issue one will be impressed by the evidence that progress is being made in refining and simplifying specifications. An excellent illustration is provided by the work of Yale & Towne Mfg. Co. (p. 74) in developing a positive means of specifying surface finishes. A second and much broader example of a similar type of effort is found in the new cross index of chemically equivalent specifications, described by Dr. Allen G. Gray (p. 80), and which is the basis of this publication's new Specification Handbook.

The aim in the case of the specifications for surface finishes is to develop sharper definitions for various degrees of finish in order to minimize confusion. The cross index provides a reference by which the material compositions of certain ferrous and nonferrous alloys of different specification may be compared. The objectives in both of these undertakings are commendable and constructive.

* * *

PAPERWORK IS COSTLY: If there is any one gripe that is more widespread than others in the metalworking industry it is that the paperwork involved in supplying information to government bureaus is excessive, costly and often futile. The Automobile Manufacturers Association has completed a survey (p. 60) which shows that companies in the automobile industry devote one and a half million man-hours annually to the sole job of filling out forms for the federal government. This costs more than \$5 million and it doesn't count the time spent on paperwork for the wage and price stabilization boards, nor does it count time and expense involved in trips to Washington.

If one were to prorate the experience of the automobile industry to that of all metalworking activity, or to all industry, the amount of effort directed to federal government red tape would

be appalling. Here is something for the Eisenhower new broom to sweep up.

* * *

FAMILIAR DOUBLE TALK: Perhaps an outgoing President's messages should not be taken too seriously. Nevertheless, many persons probably read President Truman's annual economic report with curious interest. Written by his politically-minded economic advisers, it envisions "continued prosperity at 1952 levels for most, if not all, of 1953."

Its straight-faced precepts for business and labor are worthy of note. Business leaders are advised by the economic council to cut prices and increase sales efforts. All businesses should "experiment, carry on research, plan ahead, canvass markets for current and new products and explore the less developed areas of the country. Business should squeeze profits now to assure better profits later. Workers should not demand greater wage increases than are justified by increased productivity, or where wages are out of line."

All of which is going to prompt some wag to ask, "When in recent years did any government agency make an honest effort to limit union demands to those 'justified by increased productivity?'"

* * *

FORESEES ATOMIC ERA: Engineers and others who attended the annual meeting of the Society of Automotive Engineers in Detroit last week came away with a strong conviction that industry is on the threshold of a mighty new era. One of the developments that will dominate this period is atomic energy. Walter L. Cisler, president of Detroit Edison Co., declared (p. 47) that industrial applications of atomic energy hold as much or more promise for revolutionizing life as has the development of the automotive industry.

He believes that the really great possibilities of atomic energy lie in the industrial use of this new source of heat energy and he strongly urges changes in the law that will enable private industry to participate in its development. "Without the full participation of industry," he says, "the atomic energy development cannot move forward rapidly on a broad front."



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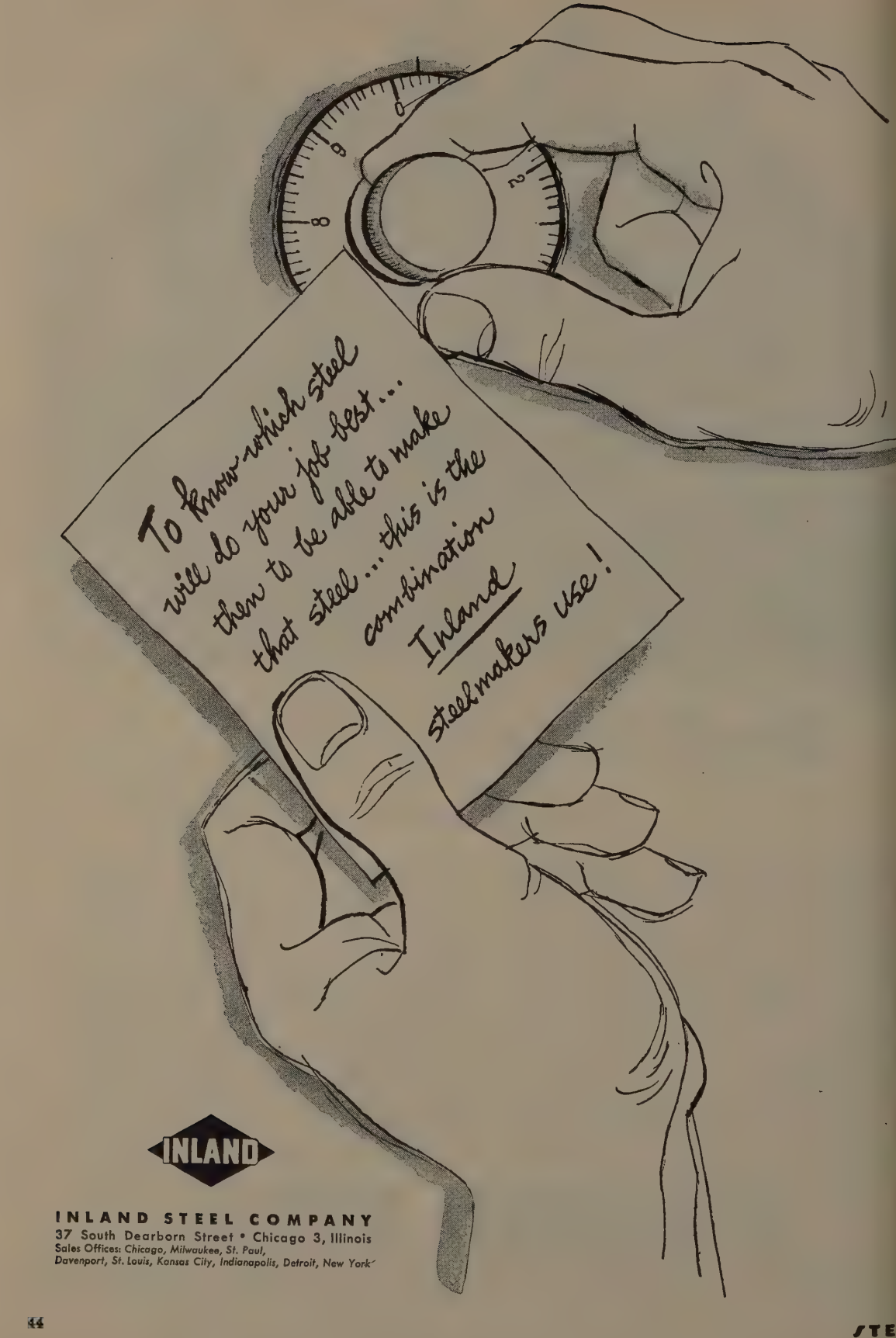
can suggest practical alternates when the steel you need is not available. And back of the Ryerson plant nearest you stand the resources of fourteen other Ryerson plants, making up the nation's largest steel-service organization. So when a kind or size is not on hand locally, we may be able to ship it from another plant.

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A detailed line drawing of a hand holding a rectangular card. The hand is positioned with the thumb and index finger gripping the card. In the background, a wristwatch with a round face and a leather strap is visible. The card contains text written in a cursive, handwritten style.

To know which steel
will do your job best...
then to be able to make
that steel... this is the
combination
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Labor Highlights for 1953

The probable picture: Few long strikes, many small ones, no pattern-setting wage settlement. Labor will concentrate on consolidating gains, getting whatever it can

NEXT five or six weeks will be testing time for big unions. They'll watch to see what the Congress and President do on labor matters, and they'll see what management does about the trial on Walter Reuther is sending out asking for revised contracts for auto companies before next year. (For details on that situation see p. 59). Using the government's new cost-of-living index, Reuther is seizing the technical end of the changeover from old index to the new as an excuse to broaden the talks to other workers. The auto contracts aren't expected to come up for a general opening before May 29, 1955. **The Balance**—If proposed legislation appears punitive, if President Eisenhower appears

strongly anti-labor and if automotive management appears markedly quiescent, big labor will probably decide on a get-tough policy that will make 1953 a wild year. But none of those "ifs" is likely to materialize.

The Republicans are realists, and labor legislation will probably be conciliatory. President Eisenhower is for the laboring man, but against the pressures from labor chiefs. He'll try to withdraw from labor matters as much as possible, allowing the old routine of union-management bargaining to be resumed. Have the two forgotten how to bargain in the old way? Odds are the talks in Detroit will indicate that they have not.

How It Looks—If the "ifs" are disposed of favorably, the general

labor picture shapes up this way for metalworking in 1953:

Wages—No pattern-setting wage settlement will take place this year. Unions will always ask for a lot more money and they'll get it in scattered cases, but the trend will be for small, token increases, with the hard bargaining coming on other matters, especially in negotiations involving small and medium companies. Unions know wage increases will be fought tooth and nail in the next 12 months.

Annual Improvement Factor — That aspect of the General Motors-type agreement is gaining popularity among unions. Evidence is the current demand of 21 co-operating railroad unions for productivity raises of 6 cents an hour annually. If you don't already have an improvement clause in your contract, union representatives will fight hard for it this year. The escalator arrangement, the other feature of the General Motors-type agree-

ment will be de-emphasized this year by most unions except the United Auto Workers, whose pet it is.

Guaranteed Annual Wage — Unions will talk more about it in 1953 than they ever have before, but they'll drop the matter once negotiations get down to brass tacks. It'll be a hot topic in 1954.

Social Insurance, Pensions—If you have them already in your contract, expect demands to liberalize your arrangements. If you don't have them, unions will try hard to win something, if only a token.

Other Issues — If unions can't get anywhere on the above issues, they'll start on the hundreds of other matters—an extra holiday, shift premiums, changes in increments between worker classifications, etc.

The Big Ones—Various metal-working contracts will be expiring on almost every day of the coming year. Besides the automotive negotiations, these other two talks will be especially important—General Electric Co. meetings with the CIO's United Electrical Workers which can be reopened on wages only by Mar. 15, and steel wage parleys that are certain to be reopened May 1 and almost certain to be settled before the deadline of June 30.

One observer characterizes coming labor negotiations as "Operations Nag." He says: "There will be little that's big, just a lot of seemingly small adjustments."

The Catch? — The "seemingly small adjustments" may turn out to be surprisingly expensive. At the U. S. Chamber of Commerce's National Industrial Relations Conference in Cleveland last week, Richard F. Doherty of National Association of Radio & Television Broadcasters declared that "fringe benefits and fringe payments already equal 20 per cent of the nation's direct payroll costs," or \$700 per employee per year.

No long, but many short strikes will characterize this year. The total number of man-days lost will not equal the 55 million lost in 1952 as a result of walkouts, but the total will be surprisingly high because all indications now are that management will take a stand this year and hold it.



C. H. VAUGHAN
... elected IFMA president

Matter of Manpower

Industrial furnace makers report manpower, not materials, curbing output today

MANPOWER is causing the most serious disruption of production in the industrial furnace manufacturing industry. Engineers, draftsmen, designers and other skilled workers are often drafted or lured to other industries.

Materials are virtually no problem, industry representatives reported as they convened Jan. 12 in Cleveland for the midwinter meeting of the Industrial Furnace Manufacturers Association whose members last year did \$120 million worth of business.

Below Par Hurt — Inability of heating equipment makers to establish the essentiality of their industry in the early days of the defense effort resulted in serious delays in production, association members were told by L. A. Shea, NPA representative. Thus a prime contractor who received high priority machine tools still cannot get his production line going until he has the heat treating equipment needed for that production.

Furnaces from World War II stored at many different depots throughout the country are little used in defense production. Furnace men feel that some procedure should be adopted for disposal of

this surplus, much of which is rapidly deteriorating.

Salvage—It may be possible to rehabilitate some of the equipment for further use. If not, transformers, temperature controls and nickel component parts should be salvaged and made available to the furnace industry.

Furnace association members approved a new set of by-laws, which C. H. Vaughan, Electric Furnace Co., Salem, O., president. Also elected were L. H. Gillette, Weinghouse Electric Co., Meadville, Pa., vice president, and R. E. Wytaker, Swindell-Dressler Co., Pittsburgh, treasurer. New headquarters of the association are 25th St., N. W., Washington, D. C.

Giant Ingot Poured for Press

A giant 275-ton ingot for the first of six columns required for an Air Force 50,000-ton die forging press was poured by Bethlehem Steel Co., Bethlehem, Pa. The open hearth heats were poured without interval to fill the 18-foot high, 9-foot diameter ingot mold.

Departing from the conventional one-piece cylindrical column design, each column in the new press will be rectangular and fabricated of three rectangular forgings up to 110 feet long. The assembled press standing ten stories high will be installed at North Grafton, Mass., on a concrete foundation 100-feet deep already constructed by Loefer Construction Co., New York.

Inland Pours 80-Millionth Ton

Inland Steel Co. poured its 80-millionth ton of steel, Jan. 15, said Hjalmar W. Johnson, vice president at Inland. The 80-millionth ton was poured from one of four new completed open-hearth furnaces at Inland's Indiana Harbor works.

Those four open hearths, put into operation late last year, are located 2 miles out beyond the natural Lake Michigan shore line on a peninsula built up over the years of slag discharged from Inland's blast furnaces and open hearths. Steel was first poured by the company in 1902 when capacity was 60,000 tons annually. The four new open hearths add 750,000 tons to annual capacity, lifting Inland's annual capacity to 4.5-million tons.

: Men See New Era Ahead

The automotive-aeronautical engineers predict a new future in materials, power sources, fuels. They call for greater freedom in atomic energy developments

TOPICS ranged from the kind of power plant Buck Rogers' space ship will have to how heavily the atom should be applied to the car's accelerator pedal for good gas economy. Occasion was the Society of Automotive Engineers' annual meeting last week at the Sheraton Hotel, Detroit.

Automotive-aeronautical engineers act and talk as though they are at the threshold of a mighty era in materials, power sources and the reasons for now little-understood phenomena. For example, while one group was talking about titanium, discussing its current application and up-coming applications, another was analyzing results of new aviation fuel additive and predicting what occurs at the spark plug octane requirements of an engine are reduced.

The complete newness of many of the subjects which may be bearing on the metalworking industries in future years is indicated by this partial listing: Wear and corrosion resistant coatings for cars, glass-reinforced plastics, steel, iron, atomic energy's industrial applications, helicopter gas turbine design, thermal propulsion for inter-planetary space travel, weapons development and titanium. The engineers carried on forward thinking even to the mechanics of the meeting itself by discussing the operations of a new car axle proving ground over loudspeakers to their meeting.

The most intriguing of those subjects—because it ultimately will have the greatest influence on our life—is atomic energy. To Walker, president, Detroit Edison, the development of industrial applications for the splitting of atoms as much or more promise to revolutionize life as the development of the automotive industry.

The really great possibilities of atomic energy development appear to lie in the industrial use of this new source of heat energy



ROBERT CASS
... elected president of SAE

which has been made available," he says, but as of now government law prevents private industry from owning fissionable material or facilities for using such material. "Private industry has not had the opportunity to participate in the development on a competitive enterprise basis as it has in other great developments of the past... Without the full participation of industry, the atomic energy development cannot move forward rapidly and on a broad front. There is a great need therefore for Congress to reconsider and modify the terms of present legislation," he says.

Plastics — Another far-reaching subject which automotive engineers have only recently decided can be extremely useful to them is glass-reinforced plastics. Speakers on aspects of this topic mold a future for it of almost unlimited size. I. M. Scott, president, Winner Mfg. Co. Inc., believes that historians will one day attach the "plastic age" title to the era being entered.

The Society of the Plastics Industry Inc. figures that reinforced plastics production increased 40

per cent last year, the polyester resin sales rising to 19 million pounds from 7 million pounds in 1949, 9 million in 1950, and 14 million pounds in 1951. Prospect for this year, the plastics society feels, is for another 40 per cent increase to about 27 million pounds of polyester resin.

Mutual Admiration — The plastics men like the looks of the automotive industry, and the admiration is beginning to be mutual. How soon plastics will get a real foothold, they are hesitant to say. The problem presently is lack of a fabricating industry. Present processes for molding car bodies of reinforced plastics tie up a mold cavity four to seven minutes. That delay necessitates for high production more floor space than the auto industry is willing to allow.

Mr. Scott believes that production of plastic automobile bodies in quantity cannot be undertaken soon, but adds "If a company came to us now with a 5000 to 10,000 bodies-a-year requirement we could talk to them seriously and the tooling cost would be staggeringly low. I think we could do some very nice tooling for \$100,000 for 5000 units a year." Use of plastics, furthermore, would open up many new styling opportunities.

New President—Elected to the presidency of the SAE for 1953 was Robert Cass, assistant to the president, White Motor Co., Cleveland.

Cease-and-Desist in Lead Case

Any common course of action to fix prices or restrain competition in the sale or distribution of lead pigments must be discontinued under a cease-and-desist order issued by Federal Trade Commission against the National Lead Co., Anaconda Copper Mining Co. and International Smelting & Refining Co.—all of New York; the Eagle-Picher Co. and Eagle-Picher Sales Co., Cincinnati; Sherwin Williams Co. and Glidden Co., both of Cleveland.

Lowell B. Mason filed a dissent in which he challenges the power of the commission to act to prevent price parallelism and further acquisition of property of firms competing in the production and sale of commodities.



10-millionth Stab-Lok comes off the line as . . .

Circuit Breakers Get Simpler

Simplification and standardization have helped promote the use of light-duty circuit breakers. Today, 40 per cent of all new home installations have them

A FEW years ago several big utilities paid subsidies to electric contractors to install circuit breakers in new homes. Today makers of light-duty circuit breakers stand on their own feet competitively, claiming 40 per cent of all new home installations. They hope to make further inroads on a market once conceded to fuse box makers.

Though circuit breakers have long been used to protect heavy industrial and utility loads, the light-duty thermal-magnetic units for lighting, appliance circuit control and light industrial applications have fought many a battle for recognition. Growth of this segment of the circuit breaker industry into what today amounts to an estimated \$18-million business follows a pattern long-successful in bringing new products to the public eye and pocketbook: Simplify and standardize design and mass-produce.

The Ford Touch—The formula that worked so well for Henry Ford is doing the same for circuit breaker producers. Last week in Newark, N. J., one of them took the wraps off its production secrets and told how it succeeded in narrowing the differential between fusible circuits and circuit breakers to

about 6 cents for the average installation in the modern home.

Federal Electric Products Corp. stamped the UL seal on its 10-millionth circuit breaker Jan. 12, promptly presented it to the man most responsible for its amazing 2½-year production record, Thomas M. Cole, its 31-year-old president. His company (trade marking its product Stab-Lok) has cut circuit breaker prices in half over a 2½-year span. It's got eight plants producing today and is building its biggest at Scranton, Pa.

Simplify, Mechanize — Federal's technique is to design the breaker from its inception with mass-production as a prime objective. Parts were eliminated or combined so that only five elements come together in final assembly: The metal heart, handle, load terminal and contact, kick-off spring, case.

Breakers will interrupt 5000 amperes and operate at least 10,000 times. Average breaker operates four times a year. At its current production rate of 6,000 units a year, Federal says it has a long way to go before its market is saturated. Use of breakers is now allowed in all U. S. electrical codes. Greatest percentage use started in Texas and California, is moving east.

DPA Grants 53 Certificates

San Manuel Copper Corp., near Mammoth, Ariz., leads the list of 53 applicants granted certificates of necessity for accelerated amortization from Dec. 18 through Dec. 30, 1952, with \$71,228,500 in three authorizations. From 40 to 75 per cent of that is allowed for fast write-off.

The company plans copper and molybdenum mining facilities including a \$9-million power plant, \$7.5-million railroad and \$54-million worth of mining equipment, surface mill facilities, smelting facilities and equipment and power plant equipment. Last July, the construction Finance Corp. granted San Manuel a \$94-million loan to undertake the Mammoth project.

Defense Production Administration now has authorized certificates of necessity for \$24,082,656,000 in 15,015 new or expanded facilities. Only 61 per cent is allowed for fast tax amortization.

Heat Exchanger Goal Reduced

Defense Production Administration reduced the expansion goal for the production capacity of tubular heat exchanger industry from 58.5 million square feet to 53.5 million square feet of heat exchanger surface by Jan. 1, 1954. The revision came after a re-evaluation of supply and requirements.

Certificates of necessity for fast tax write-off are issued for about 7.2-million square feet of the new capacity, and the industry is providing about 5.8-million square feet without benefit of fast write-off. Direct defense-supporting military programs are taking more than 90 per cent of the current production of tubular heat exchangers.

Shipyards Fall Short of Goal

American shipyards constructed 724 inland water vessels during 1952, Defense Transport Administration discloses. The actual production was short of the goal of 1000 vessels because of shortage of materials, says John P. Coakley, DTA inland water transport division director.

A breakdown of the figures reveals that of the vessels built

ugs, 42 towboats, 432 dry
arges, 145 tanks and 21 mis-
ous nonself-propelled ves-
n addition, 303 more vessels
nder construction in 1952
ntracts were issued for 778
to be started in 1953.

Coakley says that DTA is
hopeful that for the four-
period beginning Jan. 1, 1950,
extending through Dec. 31,
ve shall see the full DTA ex-
goal of 3923 vessels re-

Chrome Imports Needed

users of metallurgical
are operating with less-
normal inventories. If im-
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nt on foreign sources, can be
ntly increased, consumers
use from 20 to 30 per cent
uring 1953 than they did last
United States consumption
is estimated at 610,000 tons.
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principal deterrent to greater
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r improvements are anti-
as materials and rolling
purchased in part with the
funds made available by the
conomic Cooperation Admin-
ion in 1951, become available.
ECA agreement provided for
vance of up to 5-million-
sterling to aid in rehabilita-
t the line.

Plans for the British

British Token Import Plan
e active again in 1953 says
office of International Trade.
ted on the same basis as in
the token shipment plan al-
U. S. manufacturers to send
shipments of their products
U. K. even though such im-
are generally prohibited.

cluded in the list of 197 items
le for token shipments are
n iron and steel products,
ical apparatus, agricultural
arden machinery, photograph-
ds and office supplies.

AIR VALVES

Growth of pneumatic control systems has quintupled the number of air valve makers in the last 12 years. Their dollar sales amounted to about \$150 million in 1952



Compressed Air & Gas Institute

"IF IT'S an automatic device, it can be air powered," says one Detroit air valve maker.

That's not absolutely true, but nearly enough to allow air valve manufacturers to push sales to a record-breaking \$150 million in 1952. Pneumatic applications in the motor city, for example, include actuation of the "iron hand" which pulls steel sheets out of presses, the transfer bars which move cylinder blocks along between machining operations, the torque wrenches which tighten the nuts in assembly operations and the automatic clamping devices which hold work in process. Every pneumatic application in industry requires at least one, usually more, air valves.

Surprise!—Rapid growth of the air valve industry has been a surprise even to new manufacturers who ventured into the field. Many firms report sales have constantly increased each year since they began making air valves—five, six or ten years ago.

While most air valve makers expect business to level out in 1953 or perhaps fall off a bit, the long range outlook is optimistic. Two factors buoy it up. One is increasing labor costs which force manufacturers to seek ways to increase productivity. Automation by air is often turned to and that's where air valve makers breeze in. The other is the jet engine which, by making supplies of hot air under pressure available, has promoted the growth of air heating and de-

frosting systems for aircraft. Previously gas heaters and fans were necessary. Now, the bleed air from jet engines is used.

Good Delivery—The phrase "air valve" can be used to describe everything from a simple half-inch snap valve or tire tube valve to a large butterfly valve used on iron and steel making furnaces. The delivery story differs greatly on these various standard and special valves. In general, delivery dates for standard valves are half of what they were a year ago. And they're running about 10 days to 2 weeks, if the item is not in stock. Delivery on "specials" ranges from 6 to 8 weeks.

These delivery times reflect a substantial easing in materials. Brass for making bronze castings is the major material used in smaller valves as alloy iron and steel are for larger ones. Copper, critical material for solenoid-actuated valves, has eased substantially from a year ago when it was the main shortage on electric valves.

It's in the standard air valves for pneumatic control systems on production machinery where 1953's leveling out in sales will cause the greatest competition. Pressure on sales in this quarter is expected to hold total business for 1953 under \$140 million. But, no air valve makers expect to be forced out of business this year and there are five times as many full-line air valve makers today as there were in 1940.

Big Boost for Machine Tools?

ODM advisory group urges continuing governmental purchase of production tools. "More economical than rusting stockpiles," Vance committee says

A NEW CONCEPT of national planning—that of retaining a permanently strong military production base—is suggested by the final report of the Production Advisory Committee of the Office of Defense Mobilization. Confirming a previous interim report (STEEL, Dec. 1, p. 49), the committee said maximum security can be attained economically by maintaining defense production plants in readiness instead of stockpiling the finished product.

Foremost problem faced by the group under the chairmanship of Harold Vance, Studebaker Corp. president, was to fill the gap between present production capacity and the potential necessary for full mobilization. The committee urged that the government buy \$300 million of new machine tools annually for about ten years to keep its inventory of 550,000 tools in good condition. Added production tools would make stockpiling unnecessary. Gaps in the nation's defense could be plugged by Defense department purchase of \$1 billion to \$2 billion of additional tool and production facilities.

Recommendations—While pointing out that post-Korean mobilization gave first priority to meeting current military needs over increasing capacity, the Vance committee advises ODM to step up efforts to complete a statement of mobilization end-item requirements, to create needed facilities and to stimulate private industry toward the same goal. The lack of a list of requirements is a present difficulty, the group said.

Substitution of production ca-

pabilities for end-item reserves is not sufficient of itself, the report continues. Reserve production capacity must be kept up to date and



HAROLD S. VANCE
... his ODM group reports

in working order. Towards that end, continued purchases of production equipment were recommended. In determining the proper balance between stockpiles and industrial capacity, the Vance committee suggested that economy should be the standard. Obsolescence is much greater in military items than in production equipment. Reliance upon obsolete weapons could easily spell defeat in an all out war, aside from the monetary loss in stockpiles of rusting equipment.

Aids to Defense—To help the nation build its military production base, suggestions include special consideration to be given production equipment industries in applying wage and price controls. Committee members also asked the Defense department to promote in-

dustrial research as a means of insuring that the most modern processes would be available for military production.

Development of new design production equipment, they say, is vital to our military preparedness as the development of the new weapons themselves.

Rejuvenated Scrap

Steel scrap collection has grown into \$1 billion business, dealers hear in New York convention

MECHANIZATION is rejuvenating the scrap iron and steel industry, a business grown to a \$1-billion giant. The scrap man's rise to importance was strikingly brought out last week in an equipment exhibit held during the silver anniversary convention of the Institute of Scrap Iron & Steel in New York.

Some 36 exhibits presented cranes and hoists, magnets, bale shears, presses, handling equipment and small tools. Displays included working models and photographs to acquaint scrap men with latest advancements in equipment for scrap processing and preparatory activities. Increasingly cost-conscious, industry members are accelerating use of similar products. Equipment builders are aggressively cultivating relatively virgin scrap territory.

Group Participation—The three-day convention program was arranged to facilitate individual member participation. Questions of fair trade practices, quality control and other industry problems were discussed from the floor.

Generally, scrap dealers anticipate high-level business through 1953. Ralph E. Ablon, president of the institute, says indications point to little, if any, drop in operations this year. Other executives say the new year could well become another record-breaker for the scrap industry. Last year more than 35 million tons were shipped by scrapmen to iron and steel mills and foundries. Now, with steel ingot capacity expected to top 120 million tons annually over the next several months, record shipments of more than 36-million tons

SELECTED DEFENSE CONTRACTS IN EXCESS OF \$100,000

PRODUCT	CONTRACTOR
Milling Machines	Cincinnati Milling Machine Co., Cincinnati
Mortar Shell Parts	Schaible Co., Cincinnati
Mines	American Bantam Car Co., Butler, Pa.
Fuzes	A. P. Controls Corp., Milwaukee
Small Arms Parts	Lonar-Wood Tool & Engineering Co., Detroit
Aircraft Engine Parts	United Aircraft Corp., E. Hartford, Conn.
Carburetors	Bendix Aviation Corp., Detroit
Indicators	Lewis Engineering Co., Naugatuck, Conn.
Pumps	Vickers Inc., Detroit
Amplifiers	Mark Simpson Mfg. Co. Inc., Long Island City, N. Y.
Electron Tubes	Kuthe Laboratories Inc., Newark, N. J.
Teletypewriters	Kleinschmidt Laboratories, Deerfield, Ill.
Automotive Parts	Caterpillar Tractor Co., Peoria, Ill.

used scrap would not be sur-
g. The prediction assumes
production and foundry oper-
will remain at capacity
through the year.

stitute officers serving in 1952
re-elected for 1953 with Ralph
lon, Luria Bros. & Co., New
continuing as president, and
C. Barringer, Washington,
ecutive vice president.

y members of the directorate
D. Sloan Hurwitz, Buffalo;
n S. Addlestone, Sumter,
Sidney Grossman, St. Louis;
a Mahler, Detroit; Max
ssberg, Chicago; Samuel Sha-
Phoenix, Ariz.

CKLIST ON CONTROLS

Materials Orders

TRIC UTILITIES—Revocation
ection 2 to NPA Order M-50, ef-
Jan. 7, 1953, restores to the elec-
ilities industry the normal 90-
level of steel inventories. The di-
a imposed a 60-day limit on the
ry after the steel stoppage.

TRIC UTILITIES—Amendment
NPA Order M-50, issued and made
ve Jan. 14, 1953, provides full
and second quarter, 1953, and ad-
quarterly allotments of controlled
als for "minor requirements" of
ic utilities.

Price Regulations

OT MOLDS, STOOLS — Amend-
5 of Supplementary Regulation 3
R 30, issued and effective Jan.
53, states that ingot molds and
definitely are not covered by this
tion. CPR 60 covers them.

KITE—Amendment 30 of General
iding Regulation 30, issued and ef-
e Jan. 9, 1953, exempts from ceil-
ing regulation sales of bauxite be-
affiliated corporations.

BILT, USED AUTO PARTS —
dment 1 of CPR 139, issued Jan. 9,
and effective Jan. 14, permits
ders of automotive parts who find
practical to determine ceilings by
rtage adjustments applied to the
al manufacturers' ceiling prices to
to OPS for ceilings determined in
custumary manner.

STRIAL SCALES—General Over-
Regulation 42, issued and effec-
an. 12, 1953, authorizes an increase
er cent in ceiling prices for manu-
ers of industrial scales and bal-

INERY—Amendment 44 of CPR
ued and effective Jan. 12, 1953,
s manufacturers of machinery
lated manufactured goods to apply
approval of changes in their list
and discounts when such changes

do not increase the general level of
ceiling prices.

COAL TAR—Amendment 14 of Sup-
plementary Regulation 13 of General
Ceiling Price Regulation, issued Jan. 12,
1953, and effective Jan. 14, authorizes
processors of coal tar to increase ceil-
ing prices by about 6 per cent.

BEEHIVE OVEN COKE—Amendment
15 of Supplementary Regulation 13 of
General Ceiling Price Regulation au-
thorizes an increase in prices of beehive
oven coke averaging 6 per cent. It was
issued and made effective Jan. 12, 1953.

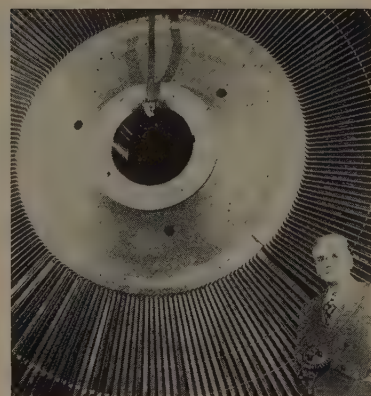
CASTINGS—Amendment 9 of CPR 60,
issued and effective Jan. 13, 1953, states
specifically that all cast rolling mill rolls
are covered by this regulation.

PLUMBING FIXTURES—Amendment
1 of Supplementary Regulation 26 of
CPR 22, issued Jan. 12, 1953, and ef-
fective Jan. 17, authorizes an increase
of approximately 1.85 per cent in cur-
rent ceiling prices for manufacturers of
enameled cast iron plumbing fixtures.
Because the increase reflects increased
costs of metals, Amendment 6 of Gen-
eral Overriding Regulation 35 places
such fixtures in Appendix C, the list
of materials not permitted further ma-
terials costs adjustments. It was issued
and made effective simultaneously with
Amendment 1 of SR 26 of CPR 22.

Steel Production in 1952: Third Largest in History

STEEL PRODUCTION in 1952 was
the third largest in history. Fur-
naces poured 93,149,213 net tons
of steel for ingots and castings,
compared with 105,199,848 net tons
in 1951. The steel strike cost the
nation an estimated 18-million tons
in 1952.

Record production in the fourth
quarter totaled 28,928,716 net tons,
or more than 2.1-million tons over
steel output in the final three



Shows Contrast in Sizes

Largest and smallest turbine wheels
manufactured in 1952 by General
Electric Co., Schenectady, N. Y., ap-
pear above. Forming a background
for Glenn Warren, general manager
of the company's turbine division, is a
14-foot wheel which revolves 1800
times per minute in a steam turbine.
Mr. Warren holds the smallest wheel,
no more than six inches in diameter

months of 1951. Steel mills in De-
cember produced 9,683,000 net tons,
compared with 9,438,886 net tons
in November and 8,890,678 net
tons in December, 1951. The accom-
panying table shows details.

The American Iron & Steel In-
stitute says that industry capacity
reached 117,547,470 net tons on
Jan. 1, 1953. Steel capacity is ris-
ing toward an expected figure in
excess of 123-million tons annually.

	OPEN-HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated	No. of
	Net tons	% of capac-ity	Net tons	% of capac-ity	Net tons	% of capac-ity	Net tons	% of capac-ity	weekly production (Net tons)	weeks in mos.
1952										
January	8,103,123	100.7	407,298	89.3	625,696	89.7	9,136,117	99.3	2,062,329	4.43
February	7,703,066	102.4	382,712	89.8	571,432	87.6	8,657,210	100.7	2,091,114	4.14
March	8,401,140	104.4	378,861	83.1	624,190	89.5	9,404,191	102.2	2,122,842	4.43
1st Qtr.	24,207,329	102.5	1,168,871	87.4	1,821,318	89.0	27,197,518	100.7	2,092,117	13.00
April	7,101,199	91.1	323,006	73.2	566,937	83.9	7,991,142	89.7	1,862,737	4.29
May	7,291,865	90.6	318,642	69.9	594,089	85.2	8,204,596	89.2	1,852,053	4.43
June	1,446,927	18.6	22,862	5.2	169,702	25.1	1,639,491	18.4	382,166	4.29
2nd Qtr.	15,839,991	67.0	664,510	49.6	1,330,728	65.0	17,835,229	66.0	1,370,886	13.01
1st 6 Mos.	40,047,320	84.8	1,833,381	68.5	3,152,046	77.0	45,032,747	83.4	1,731,363	26.01
July	1,347,587	16.8	2,000	0.4	277,371	39.8	1,626,958	17.7	368,090	4.42
August	7,599,888	94.4	309,361	67.8	589,438	84.6	8,498,687	92.4	1,918,440	4.43
September	8,039,128	103.4	351,620	79.8	671,357	99.5	9,062,105	101.9	2,117,314	4.28
3rd Qtr.	16,986,063	71.2	662,981	49.1	1,538,166	74.4	19,187,750	70.4	1,461,367	13.13
9 Mos.	57,033,923	80.2	2,496,362	62.0	4,690,212	76.1	64,220,497	79.0	1,640,789	39.14
October	8,747,640	108.7	347,042	76.1	712,148	102.1	9,806,830	106.6	2,213,731	4.43
November	8,396,227	107.7	336,902	76.3	705,757	104.5	9,438,886	105.9	2,200,207	4.29
†December	8,654,000	107.9	343,000	75.4	676,000	97.1	9,683,000	105.5	2,191,000	4.42
†4th Qtr.	25,807,867	108.1	1,026,944	75.9	2,093,905	101.2	28,928,716	106.0	2,201,577	13.14
†2nd 6 Mos.	42,794,470	89.7	1,689,925	62.5	3,632,071	87.8	48,116,466	88.2	1,831,613	26.27
†Total	82,841,790	87.2	3,523,306	65.5	6,784,117	82.4	93,149,213	85.8	1,781,737	52.28
1951										
December	7,885,830	102.2	396,831	83.3	608,017	94.9	8,890,678	100.6	2,011,466	4.42
4th Qtr.	23,665,396	101.3	1,266,913	89.4	1,879,607	98.7	26,811,916	102.1	2,040,481	13.14
2nd 6 Mos.	46,720,240	101.8	2,520,060	89.0	3,655,563	96.0	52,895,863	90.7	2,013,546	26.27
Total	93,166,518	102.2	4,890,946	87.0	7,142,384	94.5	105,199,848	100.9	2,017,642	52.14

Note—The percentages of capacity operated in 1952 are calculated on weekly capacities of 1,816,637 net tons open-hearth, 102,926 net tons bessemer and 157,477 net tons electric ingots and steel for castings; total 2,077,040 net tons; based on annual capacities as of Jan. 1, 1952, as follows: Open-hearth 94,973,780 net tons; bessemer 5,381,000 net tons; electric 8,232,890 net tons; total 108,587,670 net tons. The percentages of capacity operated in 1951 are calculated on weekly capacities of 1,746,337 net tons open-hearth, 107,806 net tons bessemer, 144,891 net tons electric ingots and steel for castings, total 1,999,034 net tons; based on annual capacities as of Jan. 1, 1951, as follows: Open-hearth 91,054,020 net tons, bessemer 5,621,000 net tons, electric 7,554,630 net tons; total 104,229,650 net tons.

† Preliminary figures, subject to revision.

Windows of Washington

By E. C. KREUTZBERG Washington Ed

The government's use of contractors' technical information will be more limited as an ambiguous subparagraph in procurement regulations gets changed

GOVERNMENT contractors have been partially successful in their fight to get two important changes in the Armed Services Procurement Regulation. After many years of struggling, the so-called "little d" provision, covering use of contractors' technical information by the government, will be replaced by more explicit language.

Contractors lost out on their request that supply contracts be placed with the research and development contractor who developed the item. The armed services continue to maintain the purpose of a research and development contract is to make the government free to negotiate contracts with any manufacturer or manufacturers in subsequent procurement.

What It Is—"Little d" (Subparagraph d, Section 9-107.1 of the ASPR) is ambiguous. Under it both the government and the contractor can make interpretations in their own favor. Too, there has been a lot of objection to including the technical rights provision in the patent provisions.

So "Little d" is to be deleted from Section 9-107.1 and treated separately in Part 2 of Section IX. Three clauses have been set up there to cover three different classes of rights. They are intended to meet fully the two principal objections: Use of the contractor's drawings by foreign industry under the NATO agreement, and use of the contractor's drawings to solicit bids from other companies and thus encourage new competition.

Three Spheres—The first of the three new clauses covers "Limited Right To Use Information"—that is, the usual rights to use technical information for instructional, operational or maintenance purposes. The second covers "Unlimited Use of Information" by the government. The third provides for a mixed arrangement under which the rights to the contractor's technical information by the govern-

ment are to be determined in negotiation.

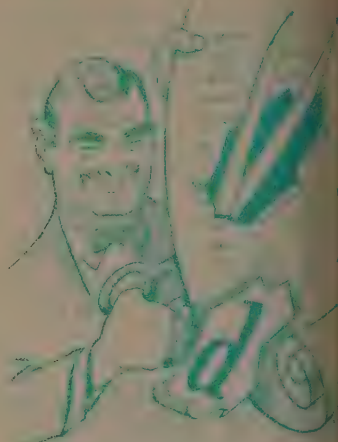
The new clauses will not become effective until representative contractors' organizations have had a chance to study them and make comments and suggestions. Such comments are to be addressed to the Office of Procurement, Munitions Board, which will process them through the Armed Services Procurement Regulation Committee.

Copies of the new clauses, with the request that comments be furnished by Feb. 1, have been sent to: Aircraft Industries Association of America Inc.; Automobile Manufacturers Association; American Ordnance Association; Machinery & Allied Products Institute; National Association of Manufacturers; National Security Industrial Association; Chamber of Commerce of the United States; Shipbuilders Council of America; Radio and Television Manufacturers Association; American Patent Law Association, Philco Corp., and Joint Electronics Industry Committee.

Army Finds Foundry Unit . . .

The United States Army has just activated its second foundry unit, the 551st Foundry Detachment, Army Engineers, to be stationed in Germany to produce repair and replacement castings for tanks, tractors, power shovels and other equipment used by our armed forces there. It will operate an electric induction furnace with capacity of 210 pounds per melt. Rated capacity, on a 24-hour basis, is 2000 pounds of gray iron, or 1600 pounds of steel, or 1800 pounds of bronze castings. Like the parent 579th Foundry Detachment, Army Engineers, Fort Belvoir, Va., it consists of 16 men.

The Army went into the foundry business May 1, 1949, when the Fort Belvoir detachment was activated. It has two basic functions:



PESKY SUBPARAGRAPH GOES . . .
"Little d" cut from U.S. buying rules

Producing replacement castings needed by the Army Engineers, and training personnel in foundry skill.

One-Man Load . . .

First all-titanium end product to be placed in production for the armed forces is the base plate for the 81-millimeter mortar. It has been ordered by Army Ordnance Corps from the Watervliet Arsenal in "limited" numbers. Its principal advantage gained is that, made of titanium, the base plate weighs 25 pounds so that it can be carried easily by one man. The same base plate in steel weighs 30 pounds and is made in two pieces carried by two men.

The titanium base plate withstands a greater pressure, permitting use of a new round of ammunition which has a greater range. It's made of sheet, welded by a technique developed by the Bureau of Mines at College Park, Md.

Question of Cost . . .

Can alumina be produced at reasonable cost from the abundant anorthosite (aluminum silica) rock of Wyoming and thus broaden the domestic raw material base for our aluminum industry? To find the answer to that question, the Bureau of Mines is about to launch a comprehensive research program at Laramie, Wyo.

The Facts about Electric Motors for Fork Trucks

...and what they mean to you

ANY users of electric industrial trucks feel all they need to know about the motor is that it has adequate power and the label of a well-known manufacturer.

Actually, there's much more to it than that.

These Facts May Surprise You

Motor requirements for industrial trucks are radically different from those of any other DC motor. Even good *vehicle* motors fall way short of being a motor for industrial truck applications.

Truck Motor Has to Be Different

The "pigs is pigs" philosophy just doesn't make sense when you're talking about industrial truck motors. If you are a careful buyer, you are naturally interested in the best possible performance: the performance of your truck can be no better than the motors which supply power for travel, lift and tilt.

Why can't ordinary commercial motors give you power and dependability you want? Well, look at industrial truck power requirements:

The travel motor must accelerate the loaded truck to 700 times a day. The hoist motor must lift and hold the load for every loaded start.

An industrial truck motor should be designed to meet the requirements of the toughest conditions under which it will operate. For example, take a 4000 lb. capacity fork truck. You need only 3½ horsepower normally. Yet under certain conditions the motor might have to put out, momentarily, as high as 10 horsepower.

But it just isn't practical to use a motor capable of delivering maximum requirements continuously. Such a motor would be much too large, too heavy, too expensive.

Why Baker Builds its Own Motors

No motor made for ordinary industrial use stands up as well as our own to the rugged requirements we've outlined. That's why nearly every industrial truck we produce contains our own Baker motor.

Baker truck motors are the result of almost 50 years' motor design experience.

During this half-century, Baker has learned a lot about motors. We've developed, and patented, many exclusive features to make our motors the best industrial truck motors available.

Let's look at some of these "exclusives", and see what they mean to you.

At least 25% more Power. The unique design of the motor in a Baker motor provides a cross-section of iron in the armature windings of almost 25% more than is found in other motors of comparable size. The more cross-section you can get into an armature, the more magnetic force you can introduce into it. This is true for the same reason that it's easier to force a given amount of water through a large pipe than in a small one, in the same time.

Easier Maintenance. When the leads on most motors burn out and need repairing, it usually means a 5 to 15 hour job. The same work on a Baker motor takes less than one hour and is required less often.

Here's why: Most motors are built with leads from the fields running through insulated holes in the motor housing. These leads are jarred and rubbed constantly by the truck's vibration. When the fine strands break, the leads burn out. Repairing these leads takes as long as 15 hours on the ordinary motor, because to get at them you must dismantle the motor.

But Baker uses external terminals, mounted on the motor casing. Leads from the field are soldered in slots at the base of the terminal.

Since there is no flexing at this terminal, lead failure is rare. When it happens, repair takes only a few minutes—not hours.

Fewer Burn-outs. Each Baker field coil is made of two parallel sets of coils, wound so both ends of wire for each set are on the outside.

Coils can be connected in series or parallel, depending on what you need. The parallel connection gives you more speed; series connections provide more torque. And you can make the change from one to the other in half an hour.

Another advantage of our field coil design: Because there are no soldered connections inside the coil, which is the coil's hottest point, risk of failure here through melted connections is eliminated.

More Power—Less Heat. A good industrial truck motor takes heavy over-loads without heating up excessively. Yet it's small enough to fit the compact design of the modern truck. Baker engineers designed the Baker motor to meet these requirements by including 30% more copper in our motor than is found in any other motor of comparable size.

This bonus copper is built into the motor without increasing the motor size by using rectangular copper wire instead of the conventional copper rounds in its armature and field coils. This gives us a fuller use of the cubic space in these windings. It gives you more emergency power with less danger of burnouts.

These and the many other exclusive features in the Baker motor make it able to deliver more power per unit of current than any other motor of its size and weight.

These are further examples of the user-benefits researched and engineered by Baker, the oldest name in electric vehicles.

For your copy of a new 8-page booklet on Baker equipment write for Catalog 54.



The Baker-Raulang Co.

1259 West 80th St. • Cleveland 2, Ohio

We Serve Steel

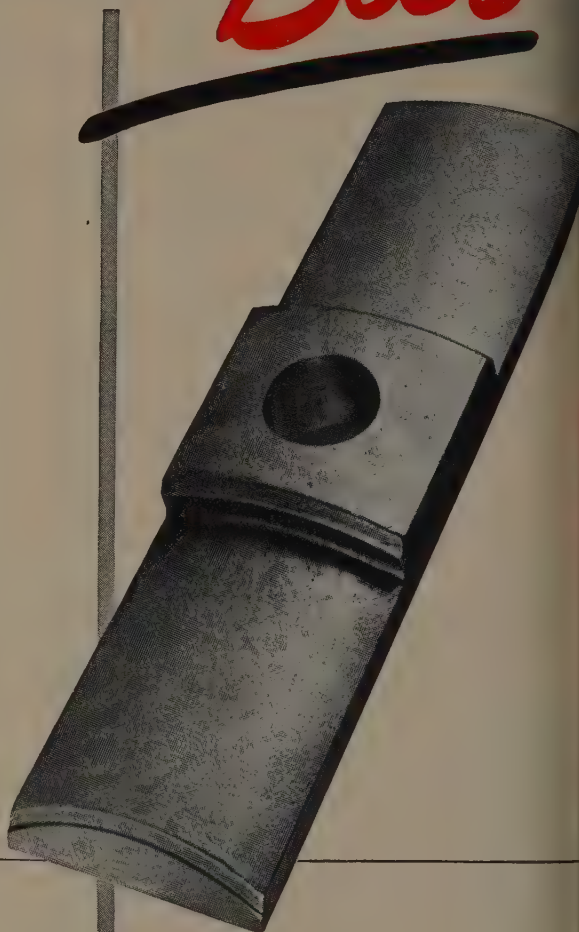
Knowing Copper Alloys

Better Best

We specialize in copper and copper-base alloys such as bronze. And we cast these metals for steel industry use by the most advanced methods. For example . . . this aluminum bronze slipper is made by our permanent mold technique and requires *no machining* after casting except for the pin hole. Oil grooves are actually cast-in. Surface hardness is completely controlled, and our customers realize dollar savings through our production-run economies.

National Bearing Division offers you the benefits of more than 50 years of experience, metallurgical research and production-run facility development.

Our 6 centrally located plants are ready to serve you. Contact National Bearing Division for full information.



A FEW NATIONAL BEARING STEEL INDUSTRY PRODUCTS: Bosh Plates • Monkeys • Tuyeres • Coolers • Mantel Plates • Stack Plates • Roll Neck Bearings • Housing Nuts • Babbitt Metals • Slippers

You're invited to visit us at our plant in Meadville, Pa. . . We'll be glad to have you know us better.

AMERICAN

Brake Shoe

COMPANY

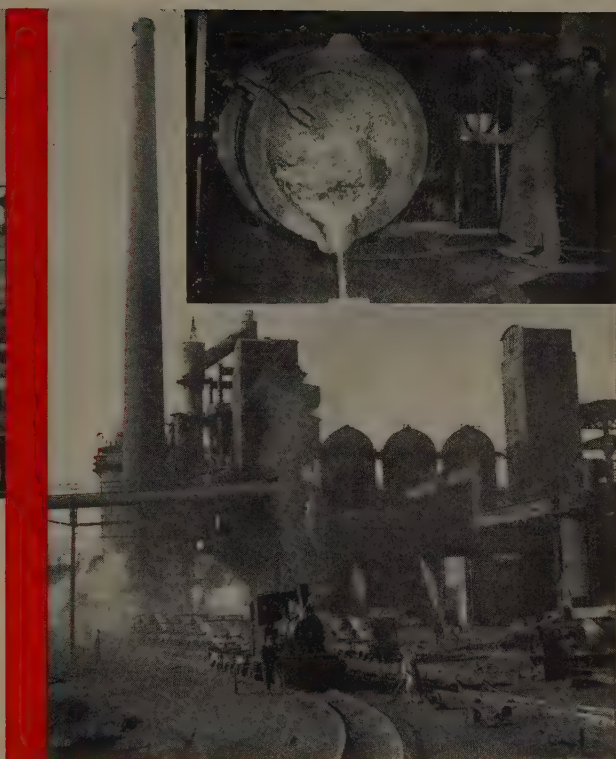
NATIONAL BEARING DIVISION

4925 Manchester Avenue • St. Louis 10, Mo.

PLANTS IN: ST. LOUIS, MO. • MEADVILLE, PA. • NILES, OHIO • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.



WINNING STEEL PLANT: The "Pokoń" steel plant in Poland (above and right) won first place in a productivity competition. Dregs are from the first heat of steel (insert) of a new furnace at the Nowa Huta plant. The slag (thimble) are cast with side ribs to prevent warpage



Eastfoto

POLAND

Pushes Industrial Expansion

Some of the glitter disappears from foreign accounts, though, when one realizes that among the latest pieces of Polish farm equipment is a horse-drawn potato digger

RTS indicate no slackening of industrial expansion behind the curtain. But, many progress sound impressive mainly because the communists have so far. The latest Russian five-year plan (1951-55) calls for these production boosts:

Iron output, up 76 per cent over 1950; steel production 100 per cent over 1950 and rolled products up 64 per cent. Thus, steel output in Russia should, by 1955, be 48.6 million tons. Poland, as one of the communist satellites, has its own six-year expansion plan, due for completion in 1955. Poland's target is 100 million tons of steel output by 1955.

Main Reason—STEEL'S Metal Yearbook issue (Jan. 5, 1953) shows Polish steel output rose to 3,575,000 tons in 1952 from 2,700,000 tons in 1951. With con-

tinued expansion at that rate, Poland will accomplish its goal.

The Polish embassy released news of other industrial progress in that country. Most notable is the opening of a new blooming mill at the Bobrek Iron & Steel Works in the Katowice district. The mill will roll about 1 million tons of steel annually.

More Furnaces — In Upper Silesia, one of the two largest blast furnaces in the country went into operation at the Kosciuszko Iron & Steel Works. In Nova Kuta, a city near Krakow, a second electric furnace for steel making began operation in December, 1952.

On Dec. 3, a new coal mine at Ziemowit in Upper Silesia went into operation. Its output, plus the production of another mine opened previously and the output of certain "other collieries" will contribute about 2 million more tons of

coal annually toward the 1955 production goal of 100 million tons, says the embassy report.

Horse of Another Color—To keep the progress story of Poland in better perspective, however, comes this statement from the Polish embassy report: "The agricultural machinery industry . . . raised its total production 10 per cent above that of 1951. Among its accomplishments during the year was the production of 14 new types of farm machines and implements, including . . . mass production on horse-drawn potato planting machines."

Iron Ore Output Up and Out

Venezuelan iron ore production nearly doubled in the first nine months of 1952 over the first three quarters of 1951. During the same period, iron ore exports nearly tripled. Venezuelan production was 841,341 tons for the first nine months in 1951 and 1,465,550 tons in 1952. Exports of iron ore were 469,668 tons for the first nine months in 1951 and 1,265,617 tons in 1952.



HERE'S THE SITUATION...

- 1 About 24 per cent of metalworking firms have supervisor training programs.
- 2 Of these, 90 per cent use subjective methods (management interview and/or observation) to determine training needs.
- 3 But only about 10 per cent use a systematic research technique to determine needs.
- 4 And only 2.25 per cent have studied the relative merits of various training methods or aids!

Executive Training Programs

Industry's insuring its future. The post-war boom in executive training programs shows that. But inefficiency in training methods is costing unduly high premiums

INDUSTRY'S making sure its future wheels are well-rounded as executive training programs roll ahead at a greater rate than ever before.

Training programs at the foreman level got their big impetus during the last war as industry was besieged by people in brand-new overalls; they proved so profitable they have been continued and strengthened since. But the concern about swivel-chair recruits is a somewhat post-war phenomenon, evangelized by the swelling ranks of industrial psychologists and a logical extension of supervisor training which is farther down the scale.

Still Spreading — Nash-Kelvinator Corp. and Packard Motor Car Co., Detroit, are both in the process of setting up programs. Dravo Corp., Pittsburgh, has just put its program under way. Firms like U. S. Rubber Co., New York, Brush

Development Co., Cleveland, and Ford Motor Co., Detroit, have had programs in effect for some years. Others, like U. S. Steel Corp., Pittsburgh, have programs going back before World War I.

All of these firms have this in common: They believe that good executives are made as well as born and therefore investment in executive training is investment in the future of the company. Without exception they're enthusiastic about the programs and feel the development of leadership potential in younger, aggressive men will strengthen their position competitively.

Over-eager—However, management's eagerness to get on the executive training bandwagon has led in some cases to quantity rather than quality programs. Virtually synonymous with executive training in the minds of some training directors is a sort of musical-chairs

arrangement in which as many executives as possible hold as many jobs as possible for a fixed length of time. When the training director's whistle blows, everyone moves over and views the company from his next seat until the whistle blows again.

Arrangements are made with colleges for formal courses, but in many cases the prospective executive picks his own or is permitted to take anything that "sounds good" with the company paying all or most of the tuition. Net result: such programs are likely to be a jack-of-all-trades individual who feels competent to do anything and actually is equipped intensively to do nothing.

Selection of candidates for management training programs is also weak in some firms. Bright-eyed young men who have attended college or appear to be more intelligent than most to their immediate supervisors are put on the merry-go-round with no measured appraisal of their abilities and aptitudes. Little wonder the training in some cases "doesn't take."

Unpointed, To Be Blunt—The

STEPS YOU CAN TAKE...

1. Don't try to train all men for all jobs.

You'll give some more training than they need, undertrain others. That's the biggest weakness in executive training today, say training researchers.

2. Analyze job structure.

Which jobs in your organization require specialized training? The number and kind of such jobs are the key to whether or not you need an executive training program.

3. Evaluate jobs in terms of:

Job Factors (derived from straight job analysis)

(a) What is the person holding the job actually required to do?

(b) What kind of training is required to do it?

Personnel Factors (derived from psychological testing of persons now doing the job well)

(a) What intelligence level is required to do the job?

(b) Are any special aptitudes required? (mechanical ability, spatial relations perception, mathematical aptitude, etc)

(c) What personality traits contribute to doing the job best?

4. Evaluate men.

(a) Use psychological testing to determine which men in your organization have raw materials—intelligence, personality and aptitude—most closely matching those required by the jobs.

(b) How much training do these men already have? If they have too much to learn, training might prove too costly.

5. Match the men and jobs.

Some men may be qualified for many of the jobs. General training may be warranted in such cases, but current feeling is that it's better to pinpoint training as much as possible.

6. Set up the training program.

(a) In-plant training. Some aspects of the needed training can best be handled in the plant. Basic information can be handled in classes or through group orientation talks given by various department heads. Some training can only be driven home through systematic job rotation. Appoint a training director to set up and co-ordinate your training program.

(b) Formal training. Outside education will be required for many jobs. Your training director will find colleges and business schools in the area eager to co-operate in determining which courses are needed by each man.

Conclusion: That's the formula for a sound executive training program. You know what the jobs require and what the men have to offer. The difference is training. Tailor your training program to each man and when that young executive is needed he'll be ready to step into the role you've prepared him for.

spread the latest word in the field, hold seminars and training schools. Their goal is to get training programs off on the right foot and keep them going correctly and effectively.

The Mahler report raises a double-barreled question for industry: If you have a training program now, are you getting the most for your money? If you haven't got a training program, should you have one? The accompanying checklist will help you decide. Chances are good that your firm could profit from an executive training program tailored to your needs and pointed toward the development of the executive talent your company will need in the future.

Extend "Stock Item" Exemption

"Stock item" exemption has been extended six months by the Renegotiation Board to July 1, 1953. The stock item exemption applies to sales under defense subcontracts of items, including maintenance, repair and operating supplies, when they are customarily purchased for stock in the normal course of a defense contractor's business. It does not apply to materials specially purchased for use in the performance of renegotiable business. Examples of stock items include nuts, bolts, screws, spark plugs and other articles normally kept in stock for all use.

Castings Group Organized

Increased technical and commercial liaison in the field of castings may result from work of a newly-formed temporary committee to organize investment castings firms. Some 24 companies were represented at a Cleveland meeting to discuss forming an association of companies in the investment castings industry.

Kenneth Bartlett, manager of metallurgical products division of Thompson Products Inc., Cleveland, is the chairman of the temporary committee. While explaining that several weeks of organizational work lie ahead, he estimates that 30 companies in major national industrial areas would be interested in joining an investment castings association.

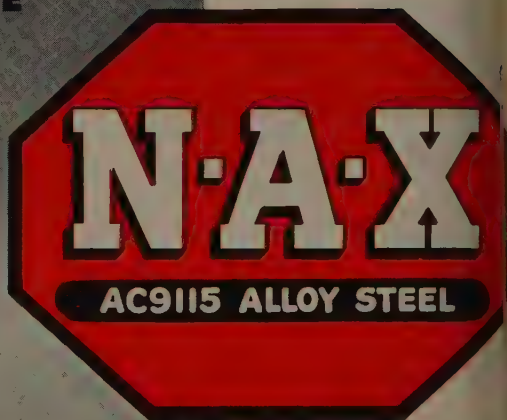
questions are being asked to about executive training. Dr. R. Mahler of the Psychological Corp., New York, in a study of the Army to learn how industry trains its executives, found that about one company in ten who use executive training uses a systematic research technique to determine its training needs; not more than one company in 40 actually studied the relative merits of various training methods. His conclusion is sobering: Industry and business in the

main have not made use of research methods to determine training needs or to evaluate the outcome of their training. A few companies have employed research methods to advantage. A definite trend toward more precise evaluation was noted. In general, the Army cannot gain much from industrial practices in this (executive training) area."

Growing Pains—The tools for executive brain sculpture are constantly being improved. Such groups as the American Management Association, New York,

a proven steel

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Mirrors of Motordom

Many believe Reuther's implied threat to strike, if contracts with automakers aren't rewritten by Mar. 1, is mere talk. Current company-union relations are cordial

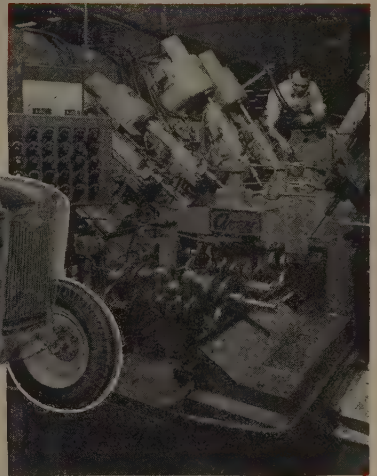
DETROIT

ME NEWSPAPER headlines like this: "Reuther issues payatum." Walter P. Reuther, and UAW president, had stat-at a press conference that "ab-nal inflation" makes changes in long-term automobile contracts ssary if they are to remain "liv-documents."

he changes which the UAW s had been proposed to the au-bile companies previously and umber of discussions have been with each of the "big three." the first time, however, the at to walk out unless these ges are agreed to was implied. he Words — "Obviously," said ther, "in the absence of an ement by Mar. 1, there is no tract."

week has now passed, and le the outcome cannot yet be icted with any certainty, some rvers have explanations of Mr. ther's motives and ideas on how issues will be resolved. The on, first, for the Mar. 1 dead-is two-fold: Agreement will e to be reached before then as ow conversion to the new BLS x (see STEEL, Jan. 12, p. 42) ch governs the escalator clause e accomplished, and Reuther e facing his UAW convention r in March and would like to d it a bunch of contract changes ring auto companies' seal of ap-val. Since the BLS Index mat-must be straightened out and tract terms which apply to it nged, the time is right, the un-feels, to press for the other nges simultaneously.

backbone—There are no indica-ns, however, that the companies eel any compulsion to make UAW-wanted contract changes ile they're talking about the new S Index. This is not to say that e may not be a possibility of rporating some of the UAW's



Avey transfer drill helps bring automation to tractor manufacture as . . .

Ford Marks 50 Years of Making Farm Equipment

When Ford Motor Co., Dearborn Motors Corp. and individual members of both organizations settled the \$342-million lawsuit brought by Harry Ferguson and Harry Ferguson Inc. for \$9.2-million after the case had dragged along in court for more than four years, there was much quiet speculation as to why the matter was brought to such an abrupt end. The settlement was made to satisfy patent infringement claims by Ferguson, and the claims of conspiracy, unfair competition, etc. were dismissed.

Recently Ford's tractor and farm equipment marketing organization, Dearborn Motors Corp., showed the reason for its action—a new tractor which it did not want involved in any pending patent litigation. The 50th anniversary model comes the closest to having sex appeal of any barnyard mechanism. There's small point in a tractor being trimmed to outshine passenger cars, but there is a sales advantage in having a product with esthetically pleasing functional lines.

Its newness is by no means limited to the sheet steel exterior. From a user's standpoint the important changes include a new four-cylinder overhead valve engine of higher horsepower, new systems of hydraulic control putting power at the driver's command whenever the engine is running and regardless of whether the tractor is stationary or moving and providing for speed variation of the hydraulically actuated appurtenances.

For a considerable segment of the metalworking industries, the product itself is of somewhat less interest than the way it is made. Ford almost completely retooled its Highland Park tractor line for manufacture and assembly of the new model. One of the transfer-type tools used for cylinder block machining was described briefly in this column on Sept. 1, 1952.

Although nowhere near as high a production operation as most automaking plants (its daily rate is about 500 units), the facility nevertheless has been automated to an unprecedented extent for the tractor industry.

suggestions. Relations with the UAW currently are extremely cordial, and Mr. Reuther's remarks to the press are believed in some circles to be an inevitable part of a labor politician's duties.

The proposed changes include setting a floor under the escalator clause and incorporating part of the cost-of-living allowance in the base rate, increasing pension benefits to offset price inflation since the monthly amount of pensions was determined, upping the annual improvement factor by a cent an hour, abolishing compulsory retirement, and adjusting wage differentials for certain skills.

Give and Take—There is give-and-take in the companies' attitude toward these requests, and they, too, think that the contracts should be living documents. They also intend to maintain the integrity of these contracts by insisting that they remain in effect until 1955—but not necessarily without modifications.

The only danger to labor stability in the automotive industry, as it appears now despite the outwardly threatening signs of the moment, is that one of the parties might get himself cornered and might have to fight to get out so that "face" would not be lost. None of the parties intends to let that happen, and there will be an extremely conciliatory attitude all the way around to prevent it. The companies, it is understood, can see some justification for some of the union's requests. For their part, however, it is not inconceivable that they will want to get a little something from the union if they give a little on some of the points. So far no one has any intention of getting "hard" about anything that will disrupt the high production pace. (For a roundup on the complete metalworking labor situation, see p. 45.)

Red Tape Cost: \$5 Million Yearly

Imagine an office with 750 people in it doing nothing but filling out forms for the federal government. That's the staff employed by the automotive industry, according to a survey conducted by the Automobile Manufacturers Association.

In a year's time those people pile up one and a half million man-hours

Auto, Truck Output

U. S. and Canada		
	1952	1951
January	409,406	645,688
February	467,691	658,918
March	517,207	792,550
April	576,505	680,281
May	546,673	695,898
June	560,947	653,682
July	246,461	522,858
August	293,722	571,442
September	592,253	505,758
October	645,862	558,971
November	550,885	480,323
December	568,577*	402,729
Total	5,976,189	7,179,161
Week Ended	1952	1951
Dec. 13	121,590	115,627
Dec. 20	134,933	107,186
Dec. 27	102,558	39,488
Jan. 3	106,102	53,601
Jan. 10	139,446	92,741
Jan. 17	140,000*	98,669

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary.

and cost their companies more than \$5 million. Furthermore the figures tell only part of the story. Not included in the survey were the time and manpower spent in compiling reports and filling out the blanks for the Office of Price Stabilization and the Wage Stabilization Board. And it didn't count the midnight oil burned by weary men puzzling over the meaning of government regulations or the miles covered between Washington and automobile plant cities.

Appeal—The statistics were put on the government's Budget Director Frederick J. Lawton's desk with this message from AMA's managing director, William J. Cronin:

"The figures given in our survey are very conservative (and) do not reflect the full load of reporting borne by motor vehicle manufacturers. We would like to recommend considerably greater activity in the work of co-ordinating, eliminating duplication, and generally reducing the burden on industry of submitting reports to federal government agencies."

CMP Paperwork — On which agencies' reports is the most time spent? Leading by a handy margin are forms for the Controlled Materials Plan under the National Production Authority. Its reporting forms take 784,251 man-hours a year to fill out. Other NPA forms take 58,000 additional man-hours. Filling out federal tax re-

turns costs automotive companies not including several of the large who did not answer AMA's question on this point, 305,000 man-hours annually.

Here are some of the other government agencies and the number of man-hours required to fill their blanks: Department of Defense, 46,469; Air Materiel Command, 15,608; Bureau of Census, 8693; Bureau of Labor Statistics, 4024; Bureau of Mines, 3164; Re-negotiation Board, 4595; Securities Exchange Commission, 3893. The AMA has not tried to find out how much of a boon this work has been to the ink and typewriter ribbon producing industries, but it feels rather strongly that it has helped the automotive industry labor shortage.

Hydra-matic for GMC Truck

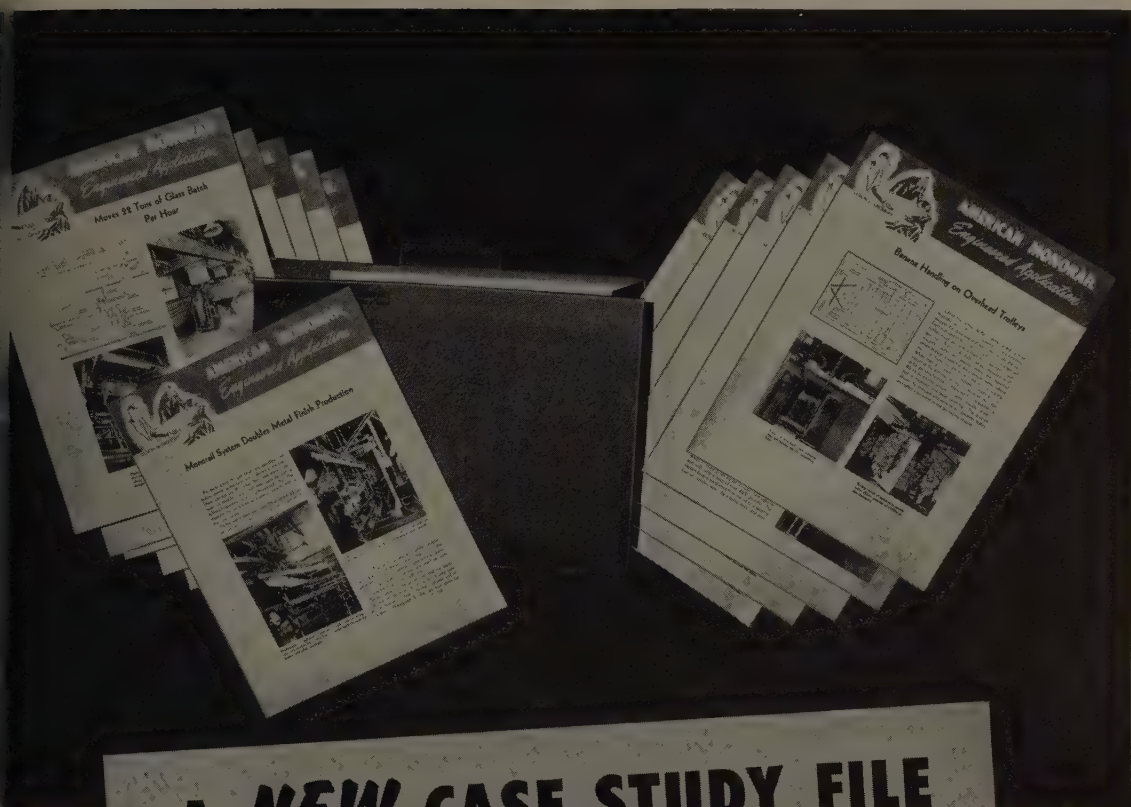
About the last act of GMC Truck & Coach Division's General Manager Roger M. Kyes before assuming his new duties as undersecretary of defense in the Eisenhower administration was to announce the availability of an automatic transmission — Hydra-matic — throughout GMC's line of light trucks. Two new gasoline engines for truck use, using higher compression ratios than many passenger cars, were also introduced. Dual-range Hydra-matic transmission will be standard equipment on the parcel delivery and will be optional in pick-up panels and other light truck types.

Aircraft Continues to Rise

Actual deliveries of aircraft have not reached their peak, the Aircraft Industries Association predicts, despite a slash in the government's aircraft procurement funds from \$13.8 billion in 1952 to a proposed \$8.3 billion in the 1954 fiscal year budget.

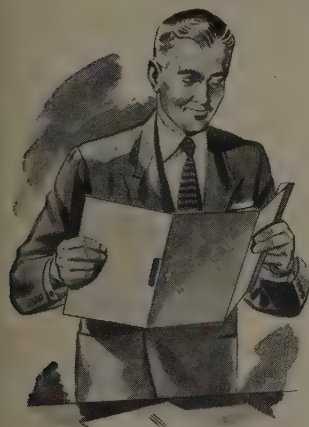
Estimates are that the 15 largest companies in aviation will have total deliveries of \$5.5 billion in 1953, up \$1.2 billion from 1952.

Producers expect over-all output to drop in 1955, and when this occurs most prime contractors can cut down on subcontracting. At that time they hope to bolster their business by production of guided missiles and increased work with jet aircraft.



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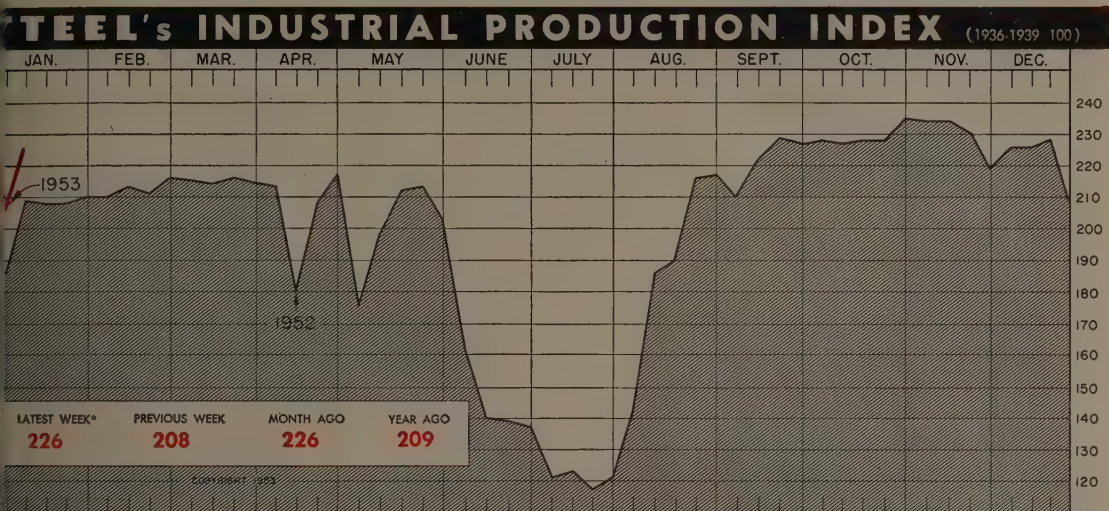
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The Business Trend



*ended Jan. 10 Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automotive Assemblies (Wards' Reports) 20%.

Makers of civilian durables see good sales ahead, as consumer demand and personal income continue to rise. Industrial production index bounces back to pre-holiday levels

FACTURERS of civilian are preparing to smoke out more consumer dollars in Sales optimism is flourishing makers of civilian durables, particular.

And the optimism are two significant upward trends: Rising personal income and the upcurve in sales volume started in mid-

re to Come—Personal income Dec. 1 remained at October's annual rate of \$276 million, the seasonal cutback in income, says the Office of Business Economics. Wage and salesbursements in the year ended Dec. 1 rose 7 per cent to \$187.9 million annually. And wages and salaries are expected to continue to rise, though less dramatically in 1952, throughout the rest of the year.

Retail sales, the other big factor, are expected to improve in mid-1952 and move upward to the end of the year. January sales volume is expected to be above January, 1952, and retailers expect volume to be high this year. The National Retail Dry Goods Association—after surveying 250 depart-

ment and specialty stores, each with an annual volume of \$1 million or more—says that 75 per cent of these stores reported that their 1952 sales topped 1951, and 66 per cent of the stores expect their profits for last year to equal or surpass those of 1951. A continuance in the high sales volume is indicated in reports from the Federal Reserve Board, which says department stores are now taking in about 5 per cent more in dollar volume than in the comparable weeks in January, 1952.

Seasonal Rise—With both consumer and defense needs high, production machinery throughout the U. S. is humming. The red line on STEEL's industrial production chart jumped to 226 per cent of the 1936-1939 average in the week ended Jan. 10, the first full workweek in 1953. Automotive production and freight car loadings made the largest increases of the nation's prime industrial indicators.

New Record in Steel Output...

With new facilities going into operation and demand insistent, steel mills are breaking production records again. The American Iron

& Steel Institute estimates that furnaces in the week ended Jan. 17 poured a record 2,240,000 net tons of steel for ingots and castings.

Trucks Rumble Faster...

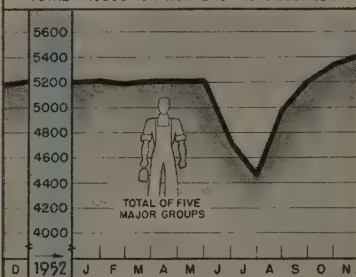
The truck industry is planning to maintain strong production through the first quarter, at least. Off to a good start, truck manufacturers are expected to assemble around 110,000 units in January, or 6000 units over the high output in January, 1952. So says *Ward's Automotive Reports* which estimates first-quarter truck assemblies at well over the 314,891 trucks produced in the first three months of 1952.

Reason for the high scheduled production is the unusually strong demand for new trucks, particularly "lights." In 1952, demand for trucks held firm until early summer, when it fell considerably. When steel production resumed after the strike, the truck industry—faced with depleted dealers' stocks—started setting new output records for the year. But the truck industry found that customers kept ordering many units long after most of the gap was expected to be filled. And strong demand is continuing into the first quarter of 1953.

With passenger car demand also insistent, the auto-truck output of the U. S. and Canada is far over

METALWORKING EMPLOYMENT

TOTAL PRODUCTION WORKERS—IN THOUSANDS



Metalworking Employment

In Thousands

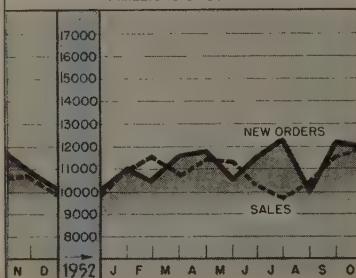
Production Workers—Five Major Groups

	Prim. Mtls. Prod.	Fab. Machn. Equip.	Elec. Equip.	Trans. Equip.
1951				
Nov.	1,151	804	1,225	717
Dec.	1,165	806	1,270	724
1952				
Jan.	1,163	804	1,276	723
Feb.	1,160	805	1,280	726
Mar.	1,154	807	1,280	722
Apr.	1,143	806	1,282	714
May	1,141	798	1,289	708
June	716	769	1,261	706
July	676	726	1,203	685
Aug.	1,110	783	1,181	708
Sept.	1,155	820	1,185	743
Oct.	1,164	842	1,206	764
Nov.	1,175	856	1,226	788

U. S. Bureau of Labor Statistics.

DURABLE GOODS ORDERS, SALES

IN MILLIONS OF DOLLARS



Durable Goods Orders, Sales

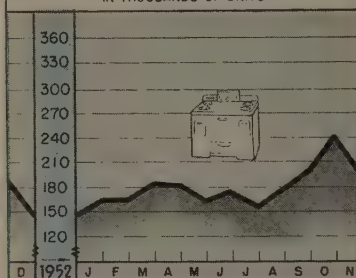
In Millions of Dollars

	New Orders	Sales
	1952	1951
Jan.	11,287	15,050
Feb.	10,876	13,474
Mar.	11,712	15,542
Apr.	11,893	12,987
May	11,712	15,542
June	12,423	13,257
July	11,393	12,235
Aug.	9,933	11,032
Sept.	12,198	10,344
Oct.	11,994	11,956
Nov.	11,031	10,732
Dec.	10,312	9,786

* Seasonally adjusted. U. S. Office of Business Economics.

GAS RANGES

IN THOUSANDS OF UNITS



Gas Ranges

Shipments in Units

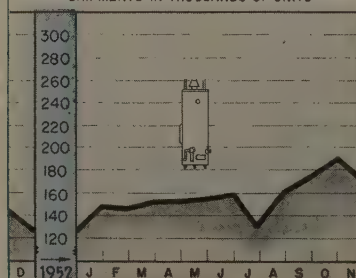
	1952	1951	1950
Jan.	166,100	260,600	185,000
Feb.	166,200	254,000	209,000
Mar.	185,200	239,800	264,000
Apr.	182,300	225,000	239,100
May	162,800	177,800	242,800
June	175,700	128,500	217,000
July	154,200	116,400	254,800
Aug.	173,600	168,100	331,500
Sept.	199,600	183,600	287,000
Oct.	241,600	210,900	308,000
Nov.	192,800	192,200	269,100
Dec.	154,800	154,800	235,900

Total ... 2,348,900 3,023,200

Gas Appliance Mfrs. Assn.

AUTOMATIC GAS WATER HEATERS

SHIPMENTS IN THOUSANDS OF UNITS



Automatic Gas Water Heaters

Shipments in Units

	1952	1951	1950
Jan.	148,700	225,600	131,600
Feb.	145,800	213,400	156,500
Mar.	153,300	223,300	172,800
Apr.	153,300	199,400	176,400
May	155,300	167,400	195,200
June	159,000	131,500	207,100
July	131,300	102,400	197,500
Aug.	161,500	124,400	259,800
Sept.	177,300	130,900	222,600
Oct.	190,800	148,800	235,100
Nov.	169,400	143,300	206,000
Dec.	127,200	127,200	202,500

Total ... 1,931,200 2,363,100

Gas Appliance Mfrs. Assn.

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Issue Dates on other FACTS and FIGURES Published by STEEL

Construction ... Nov. 24	Indus. Production ... Dec. 22	Ranges, Elec. ... Dec. 8
Employ., Steel ... Dec. 15	Ironers ... Dec. 22	Refrigerators ... Dec. 8
Feb. Struc. Steel ... Dec. 22	Machine Tools ... Dec. 15	Steel Castings ... Jan. 12
Foundry Equip. ... Dec. 29	Malleable Castings Jan. 12	Steel Forgings ... Jan. 12
Furnaces, Indus. ... Dec. 29	Pumps ... Dec. 8	Steel Shipments ... Nov. 3
Freight Cars ... Dec. 29	Prices, Consumer ... Dec. 1	Vacuum Cleaners ... Dec. 22
Gear Sales ... Dec. 22	Prices, Wholesale ... Dec. 29	Wages, Metalwkg. ... Nov. 17
Gray Iron Castings Jan. 12	Radio, TV ... Dec. 15	Washers ... Dec. 29

production in the comparable week in January, 1952. In the week ended Jan. 10, U. S. and Canadian output totaled 139,446 passenger cars and trucks, or more than 50 per cent over the week ended Jan. 1, 1952.

Employment Dips Slightly ...

Employment took a less than seasonal drop in December, as nonagricultural industries absorbed many agricultural, construction and other workers with seasonal jobs. The Commerce department says that total civilian employment by mid-December declined to 62 million from 63.6 in mid-November. Employment in nonagricultural industries increased 330,000 to 55 million, as both manufacturers and retailers scrounged for help. Despite a 1.1 million decline in agricultural jobs, unemployment throughout the U. S. continued declining as many workers withdrew from the labor force. Unemployment in December dropped to 1 million—the lowest number of jobs less since World War II.

Business Levels Off ...

Business conditions in the Chicago area on Jan. 1 continued good, but failed to surpass the level set two months previously. That the consensus of midwestern buyers surveyed by Purchasing Agents Association of Chicago Production continued to increase for 31 per cent of the reporting companies, but profits in December moved downward as 23 per cent of the members reported declines and only 11 per cent said their profits had improved.

Inventories, for the first time many months, started to climb in December. Deliveries by vendors continued to speed up, while materials prices showed some tendency to even out. Practically no change in buying policy occurred in December, with 76 per cent of the buyers purchasing 30-90 days ahead, and of the rest, the lead time for the majority being less than 30 days.

Profits Show Strike Recovery.

Industry by industry recovery from the 1952 steel strike is perhaps the most interesting trend outlined in the Securities & Exchange

BAROMETERS OF BUSINESS

INDUSTRY	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
Steel Ingot Output (per cent of capacity) ²	98.0	98.5	96.5
Electric Power Distributed (million kwhr).....	7,800 ¹	7,713	7,665
Continuous Coal Output (daily av.—1000 tons).....	1,277	1,042	1,234
Petroleum Production (daily av.—1000 bbl).....	6,580 ¹	6,516	6,178
Construction Volume (ENR—millions).....	\$323.7	\$185.0	\$266.7
Automobile, Truck Output (Ward's—units).....	139,446	106,102	92,735
TRADE			
Weight Car Loadings (unit—1000 cars).....	750 ¹	563	743
Business Failures (Dun & Bradstreet, number).....	163	89	164
Currency in Circulation (millions) ³	\$30,153	\$30,424	\$28,800
Dept. Store Sales (changes from year ago) ³	+5%	+57%	-13%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)....	\$16,911	\$16,384	\$17,746
Federal Gross Debt (billions).....	\$267.4	\$267.3	\$259.5
Bond Volume, NYSE (millions).....	\$19.6	\$12.6	\$14.3
Stock Sales, NYSE (thousands of shares).....	9,845	7,400	8,331
Loans and Investments (billions) ⁴	\$78.5	\$78.8	\$74.2
United States Gov't. Obligations Held (billions) ⁴	\$32.5	\$32.6	\$32.2
PRICES			
STEEL's Weighted Finished Steel Price Index ⁵	181.31	181.31	171.92
STEEL's Nonferrous Metal Price Index ⁶	216.0	215.4	234.9
All Commodities ⁷	109.7	109.6	115.0
All Commodities Other Than Farm and Foods ⁷	112.8	112.8	116.6

*Dates on request. ¹Preliminary. ²Weekly capacities, net tons: 1951, 1,999,035; 1952, 1,077,040. ³Federal Reserve Board. ⁴Member banks, Federal Reserve System. ⁵1935-1939=100. ⁶1936-1939=100. ⁷Bureau of Labor Statistics Index, 1947-1949=100.

Commission's financial report on U.S. manufacturers in the third quarter.

Steel companies, of course, were first to boost operations and their profits rose 15 per cent over previous quarter to \$127 million after taxes. Automotive companies, on the other hand, had high steel to maintain high operations throughout most of the second quarter and were not severely impacted until the third; profits in automotive industry plunged 10 per cent to \$198 million in the third quarter. The nonelectrical machinery industry found its third-quarter profits had declined 18 per cent to \$327 million. Makers of transportation equipment, excluding automotive, had their profits declined 3 per cent to \$61 million. Profits after taxes started up for the electrical machinery industry and makers of fabricated metal products. Producers of electrical machinery in the third quarter boosted profits 7 per cent to \$10 million, while companies producing fabricated metal products and that profits after taxes declined 1 per cent to \$129 million in the third quarter.

Light Car Orders Low...

Orders for new freight cars are continuing at low levels, while car

production rolls faster. The Association of American Railroads says that new orders for domestic freight cars in December totaled 1159 units, compared with 7845 freight cars produced that month. Industry backlog by Jan. 1 declined to 80,296 cars-on-order, compared with a backlog of 123,947 freight cars on Jan. 1, 1951.

Construction Awards Increase...

Contractors and architects who expected good business in 1953 are finding that construction awards are rolling in at a considerably faster pace than in early 1952. Contract awards for heavy construction, says *Engineering News-Record*, totaled \$323.6 million in the week ended Jan. 8, or 21 per cent over awards in the week ended Jan. 10, 1952.

Trends Fore and Aft...

Business inventories in November rose to \$75.5 billion, or \$450 million beyond the usual seasonal increase, says the Office of Business Economics... Crude oil production is running 5 per cent greater than a year ago... Total wholesalers' sales in November had declined 7 per cent after retailers' shelves had been filled with holiday goods.



"We're former Sheet Coil users. After testing Thinsteel, the precision cold rolled strip steel, it was evident that many dollars could be saved. First, we get more finished parts per ton because of Thinsteel's exceptionally close tolerance—providing maximum feet per pound. Next, we are getting much longer die life—that means less 'downtime,' too—because Thinsteel's uniformity of physicals and accuracy to all specifications smoothed our fabricating problem. And the finish keeps us out of 'hot water' in our plating department—gives us the best looking job in our business and that means more profitable business for us. Maybe you had better switch to Thinsteel."

"Sheet Coil for us, our savings are really big"



"We switched to Sheet Coil and are making more money. I know it's wide sheet 'production run' material slit to size, but it's just right for our needs. We don't use expensive, intricate dies—our simple blanking operation can take thickness variations in stride, there's no need for close tolerance material. Since our finished product is painted we find the surface finish of Sheet Coil completely satisfactory for this operation—in fact, the surface not being as smooth is good for our painting requirement. So you see, we are getting a best buy for our need with Sheet Coil."

No need for argument as to which strip is better for your job. Kenilworth stocks both—and is ready to help you determine your best buy. Make Kenilworth's big inventory your warehouse—you can depend on Kenilworth's service when you need it.

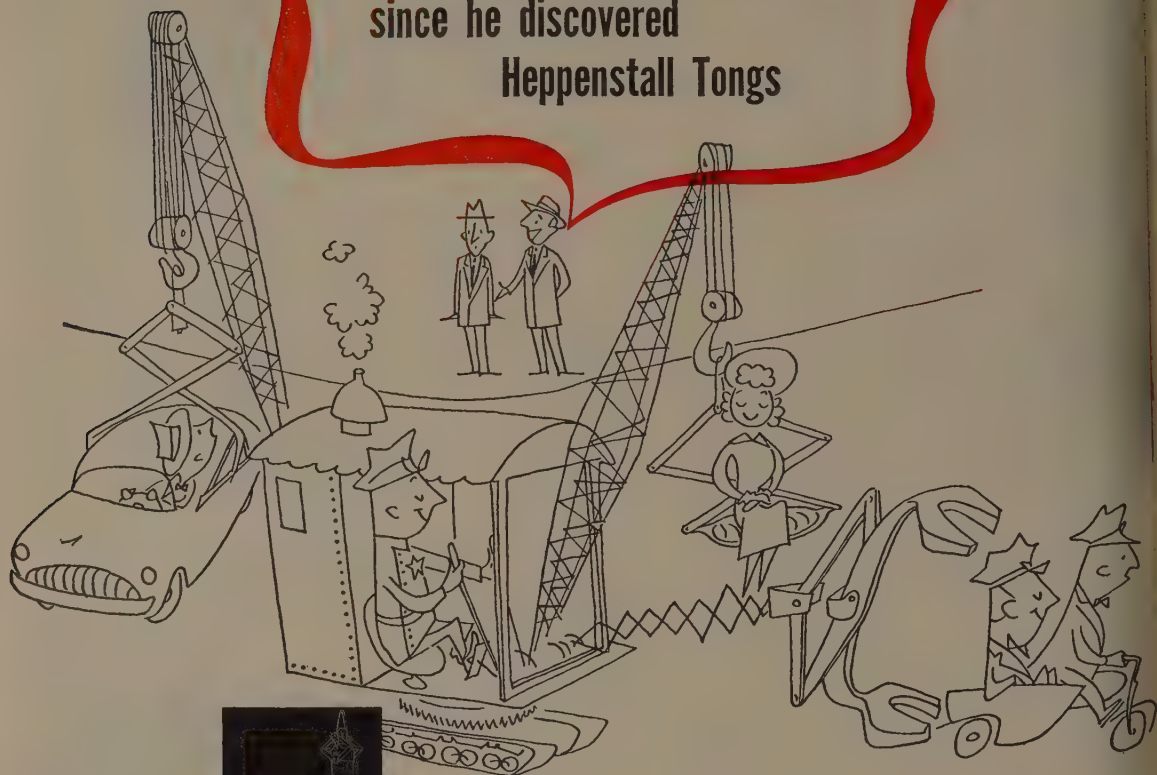
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... TONGS FOR EVERY GRABBING PROBLEM

Men of Industry



LYLE B. SCHUELER

... V. P.-sales, Diamond Power

L. B. Schueler was elected vice president in charge of sales, Diamond Power Specialty Corp., Lancaster, O. He has been sales manager since the spring of 1950.

D. Mooney was elected president of F. L. Jacobs Co., Detroit, to succeed Neil A. Moore who became president of Jacobs last November. Mr. Mooney formerly held executive posts with General Motors Corp. and Willys-Overland Motor Co.

A. March was appointed chief metallurgist for Crucible Steel Co. of America's Sanderson-Crompton Works located in Syracuse, N. Y. He succeeds David I. North Jr., made assistant director of metallurgy.

Peter-Amet Co., Chicago, elected **Robert T. Isham** vice president, **Charles C. Kennedy Jr.** director of sales and engineering, and **H. W. [Name]** supervisor of production.

Appointments at **Armco Steel Corp.**'s Ashland, Ky., Division are: **George Yost Jr.** as assistant general superintendent in charge of rolling and processing operations, a newly created position; **William [Name]** to succeed Mr. Yost as assistant to the manager of the division.



BRUNO R. MUELLER

... Pittsburgh Steel tubular sales

Bruno R. Mueller was appointed sales manager, tubular specialties, Pittsburgh Steel Co., Pittsburgh. He has been with the company since 1944 but last year was assigned to the National Production Authority where he served until recently as chief, tube section, Iron & Steel Branch.

Keystone Steel & Wire Co., Peoria, Ill., appointed **John L. Sanderson** superintendent of wire mills to succeed the late **John Moritz**. **J. W. Mahannah** was made assistant to the superintendent, wire mills.

Dravo Corp., Pittsburgh, appointed **D. Russell Pearce** assistant purchasing agent, machinery division.

Harold D. Newell was appointed consulting metallurgist and **John J. B. Rutherford** chief metallurgist, Tubular Products Division, Babcock & Wilcox Co., Beaver Falls, Pa.

Robert F. Carr Jr. was elected vice president, Dearborn Chemical Co., Chicago.

J. C. Kuhn, formerly vice president and director-sales of Morse Twist Drill & Machine Co., was appointed vice president of sales, Atkins Saw Division, Borg-Warner Corp., Indianapolis.



GEORGE M. CARVLIN

... a Kopper's div. V. P.-gen. mgr.

George M. Carvlin, vice president and assistant general manager, was elected general manager, engineering and construction division, Koppers Co. Inc., Pittsburgh. He succeeds **Joseph Becker** who retired as vice president-general manager of the division but continues as a consultant to the company.

Dwight W. Kaufmann was appointed assistant manager of sales, Rem-Cru Titanium Inc., with office in Midland, Pa. Since 1950 he has been in Pittsburgh as a metallurgist in the central metallurgical office of Crucible Steel Co. of America, co-owner of Rem-Cru with Remington Arms Co.

Officers of **John A. Roebling's Sons Co.**, Trenton, N. J., a newly formed and wholly-owned subsidiary of Colorado Fuel & Iron Co., include: **Charles Allen Jr.**, chairman of the board; **A. F. Franz**, president; and **Charles Roebling Tyson**, executive vice president. Mr. Allen is chairman of CF&I, Mr. Franz is president, and Mr. Tyson served as president of the Roebling concern from 1944 until its acquisition by Colorado Fuel & Iron.

Hyatt Bearings Division, Harrison, N. J., General Motors Corp., appointed **C. W. Kalchthaler** assistant to the general sales manager

at Harrison. He previously was assistant manager, Hyatt motor division sales office, Detroit.

John R. Hersey was named assistant sales manager by **C. O. Bartlett & Snow Co.**, Cleveland. In this capacity he will assist in general supervision of all sales activities but will continue to head the company's coal handling department. **Harry C. Orr**, formerly assistant in the foundry sales department, was named manager, standard products and repair parts sales and service department.

C. L. Heater, vice president, **American Steel Foundries**, Chicago, will head the newly formed transportation equipment division, with **G. H. Snyder**, vice president, assisting in a staff capacity; **C. E. Grigsby** vice president in charge of sales; **E. A. Walcher Jr.** vice president in charge of manufacturing; and **R. B. Cottrell** chief mechanical engineer. **R. D. Brizzolara**, vice president, who heads the Elmes & King Division, will also be in charge of the newly organized Hammond Division, with **E. L. Krejci** as general manager; **R. W. Clyne** as sales manager, **M. W. Kraegel** as works manager-Hammond plant, and **C. E. Tack** as product engineering manager.

Hunter Michaels was elected vice president-operations, **American Locomotive Co.**, New York. **D. W. Cameron** was named vice president-manufacturing, and **Manuel Alonso** vice president-foreign sales.



G. KRAUSE
... chief designer of heavy presses

G. Krause was appointed chief designer of **Loewy Construction Co. Inc.**, subsidiary of **Hydropress Inc.**, New York, in charge of **U.S.A.F.** heavy press program.

Robert McConnachie was appointed assistant chief combustion engineer for the Chicago district of **Republic Steel Corp.**

Harold Burnip was made director of purchases, **Lincoln Electric Co.**, Cleveland. He succeeds **J. S. Roscoe**, recently made executive vice president-business administration. **Norman Zollar** assumes duties of purchase engineering to succeed **Mr. Burnip**. **Arthur Walper** becomes manager, electrode division

purchases and **William Toward** continues as manager, machine division purchases.

F. L. Bryant was named superintendent for the Niagara Falls, N. Y., plant of **Hooker Electrochemical Co.** **J. D. Sweeney** was named assistant superintendent-production.

United Wire & Supply Corp., Providence, R. I., appointed **A. T. Alan** manager, brazing product sales.

A. J. Hirons was appointed manager, **Bohn Aluminum & Brass Corp.'s** Plant 24 at Adrian, Mich.

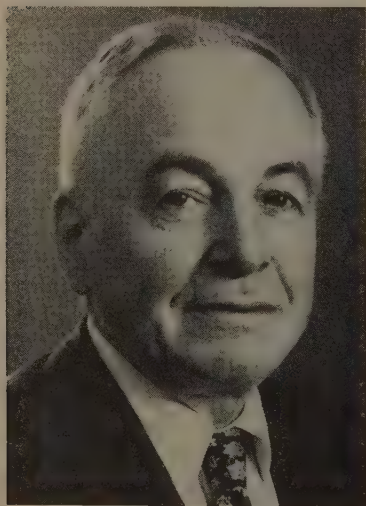
Francis L. Schmale was promoted to general sales manager, **Doub Seal Ring Co.**, Ft. Worth, Tex.

Warde B. Stringham was elected commercial vice president, **General Electric Co.**, assigned to Washington. He succeeds **Edwin E. Potter**, Washington vice president, who retires after 43 years' service.

Dr. Philip R. Marvin was elected vice president, **Commonwealth Engineering Co.**, Dayton, O.

S. E. Biggs was elected vice president-operations, **Youngstown Steel Car Corp.**, Niles, O. Since 1950 he has been vice president-manufacturing of **Trailmobile Inc.**

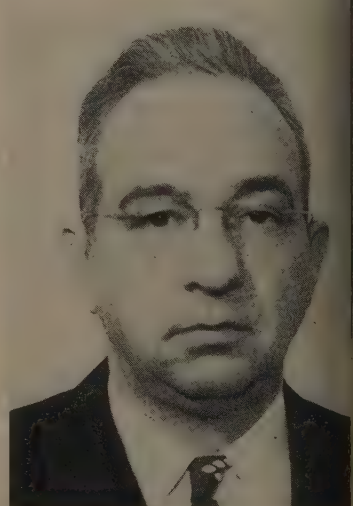
Samuel K. Hostetter Jr. was named sales manager, **Crocker-Wheeler Division**, **Elliott Co.**, at Amper N. J. For the last ten years he



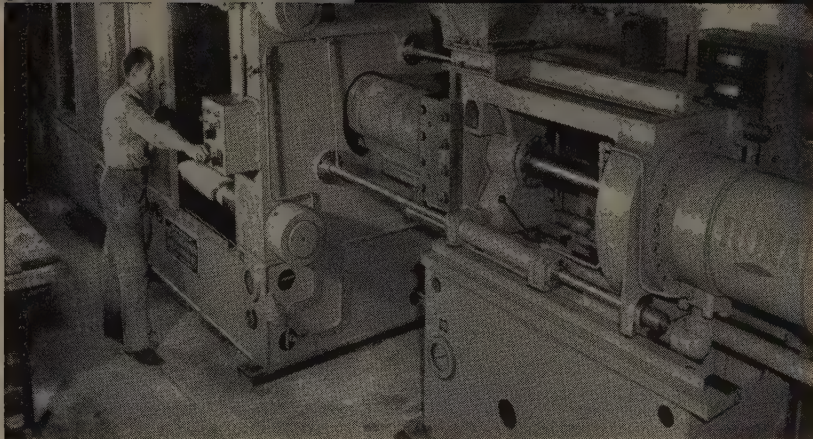
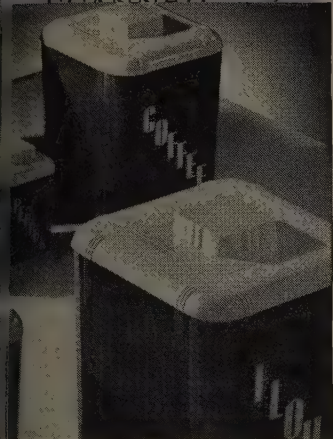
HUNTER MICHAELS
... American Locomotive V. P.



HAROLD BURNIP
... purchase dir., Lincoln Electric



SAMUEL K. HOSTETTER JR.
... Crocker-Wheeler sales mgr.



MORE PROBLEMS. The production of plastic household items by Rona Plastic Corporation was slowed down by an inadequate hydraulic oil. A switch to Sunvis 999, a year ago, restored it to normal.

PRESSURE LOSSES ENDED. There are few plastic molding machines as big as this 60 ounce model. It exerts a pressure of 1,000 tons. Because the hydraulic oil formerly used sludged up and thinned out, it could not maintain this pressure. But Sunvis 999 has fully met these severe requirements, as well as those of Rona's nine other hydraulic machines of varying sizes.

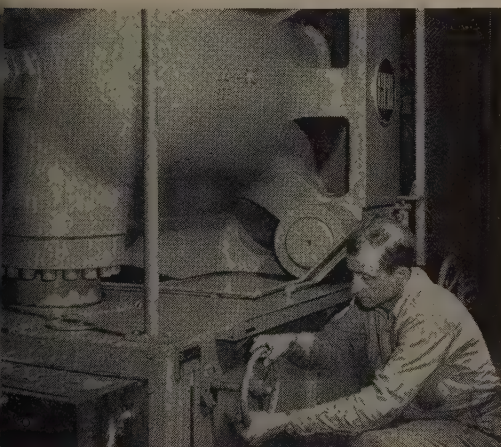
PLASTIC MOLDER'S BOTTLENECK ENDED BY SUNVIS HYDRAULIC OIL

More than a year ago Rona Plastic Corporation, New York City, had trouble with its hydraulic molding machines. The machines functioned erratically due to oil sludge clogging the control mechanisms. In addition, the oil heated out excessively at normal operating temperatures, and resulted in the loss of proper clamping pressure on the dies. To keep the machines going at all, it was necessary to drain, clean, and entirely recharge the machines at frequent intervals.

A Sun representative, called in by Rona, studied the problem and recommended Sunvis 999. He knew it would

put an end to pressure losses, because, even at elevated temperatures, it does not decrease in viscosity as much as most other oils. He also knew its exceptional stability would end the sludging problem.

Sunvis 999 proved to be the answer to all Rona's hydraulic oil problems. The original charges, with minimum make-up, are still giving good service. Rona can expect the same performance for a long time to come, because experience shows that under normal operating conditions, Sunvis 900 Series Oils are *good for the life of the equipment.*



OIL CHANGES HAVE BEEN NEEDED. Before Sunvis 999 was adopted, the oil in each of the machines had to be changed frequently (the one pictured holds 450 gallons). The original quantities of Sunvis 999 have been in use now for more than a year.

Department S-1

Sun Oil Company, Philadelphia 3, Pa.

I am interested in knowing more about Sun Hydraulic Oils. ☐ I would like to consult with a Sun representative. ☐ Send the booklet "Hydraulic Fundamentals and Industrial Hydraulic Oils."

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TECHNICAL ASSISTANCE AVAILABLE. Sun's engineers are at your service for consultation on all hydraulic oil applications. It will pay you to utilize the experience they have gained in solving a wide variety of problems in many different industries.

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GEORGE A. GADE
... Standard Pressed Steel V. P.

has been manager of the Washington office.

George A. Gade, manager, outside sales, **Standard Pressed Steel Co.**, Jenkintown, Pa., was made vice president-sales. He succeeds to a post left vacant by election almost a year ago of **J. Whiting Friel** as vice president of the company.

John Poast was made superintendent of the newly established blast furnace department at the **East Works of Armco Steel Corp.'s** Middletown, O., division. **Edwin A. Kerckmar** becomes superintendent of the blast furnace at the **Hamilton, O.**, plant to succeed **Mr. Poast**.

W. Walter Jablon was appointed vice president in charge of sales by **David Bogen Co.**, New York manufacturer of electronic equipment. He held a similar post at **Espey Mfg. Co.** with which he was associated for nearly 20 years.



JOHN F. WILSON
... wks. mgr. at Leland Electric

John F. Wilson, formerly branch contract sales manager at **American Machine & Foundry Co.'s** Buffalo plant, was named works manager, **Leland Electric Division**, Dayton, O.

At **Republic Steel Corp.**, Cleveland, **Charles J. Reiter** was made assistant manager, general order department, where **R. D. Schad** is also an assistant manager. **James B. McConnaughy** succeeds **Mr. Reiter** as manager of orders for **Republic's** central alloy district in **Canton and Massillon, O.**

W. R. Lockwood was made manager of the Seattle steel service plant of **Joseph T. Ryerson & Son Inc.** to succeed **C. W. Summerville**, who has served as manager since **Ryerson** in 1951 acquired stocks and warehouse facilities formerly owned by **Seattle Steel Co.** and **Inland Empire Steel Co.** of which **Mr. Summerville** was a founder.



JOHN L. CAMPBELL
... V. P.-sales, Ohio Steel Foundry

John L. Campbell was elected a vice president of sales at **Ohio Steel Foundry Co.**, Lima, O., the position formerly held by **T. H. Harvey** who became senior vice president.

Parker-Kalon Corp., New York, promoted **Eli Ogulnick** from controller to the newly created position of assistant general manager.

James W. Murphy was appointed manager of sales, stainless steel alloy castings division, **Allegheny Ludlum Steel Corp.**, Pittsburgh.

Oscar E. Peterson was appointed manager, Indianapolis district sales office, Dallas Division, **Revere Copper & Brass Inc.** He succeeds **P. Anderson**, resigned.

T. H. Sheehan and **Eric G. Boehl** were appointed to the newly created positions of assistant manager of manufacturing of **Houdaille-Hershey Corp.**, Detroit.

OBITUARIES...

Clarence Snyder, 72, chairman of **Snyder Tool & Engineering Co.** and **Arthur Colton Co.**, Detroit, died at **Ft. Lauderdale, Fla.**, Jan. 5.

Walter L. Maxson, 60, vice president in charge of research for **Oliver Iron Mining Division**, U. S. Steel Corp., Duluth, died Jan. 9.

Henry J. Sandblade, consulting engineer and vice president, **Thomas**

Flexible Coupling Co., Warren, Pa., died Jan. 5.

A. A. Batts, 68, former president and chairman of **Carborundum Co.**, Niagara Falls, N. Y., died Jan. 8 in Florida.

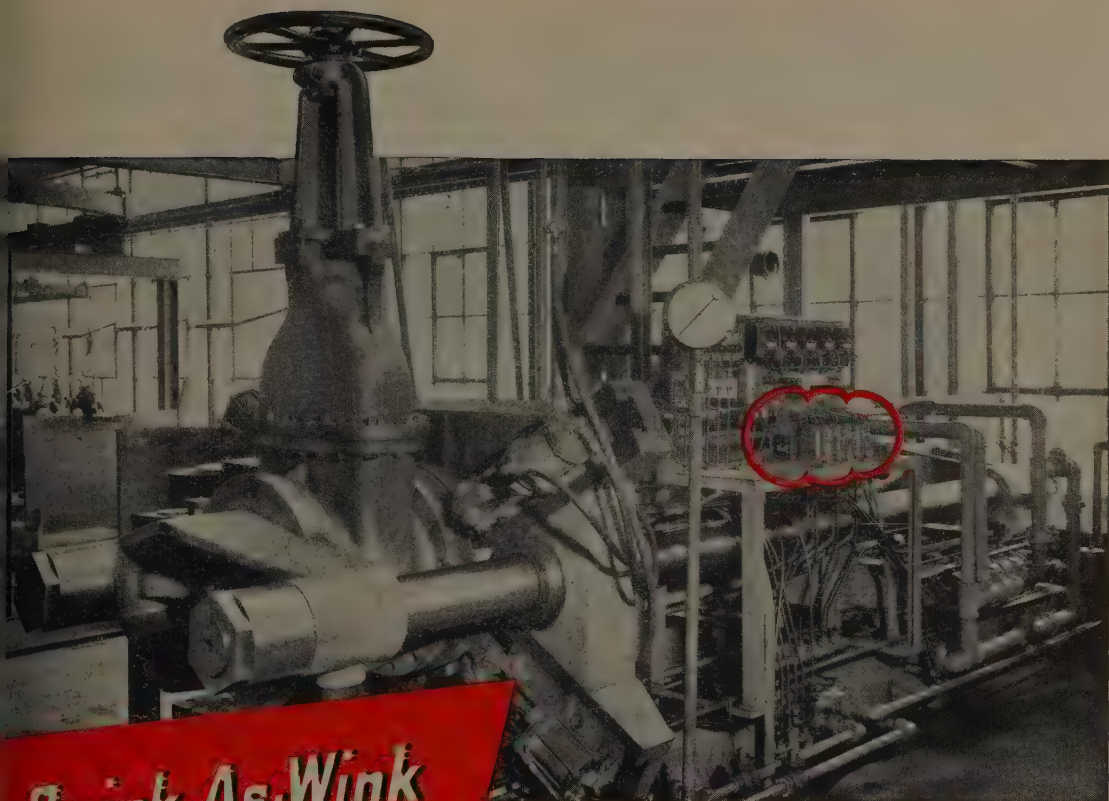
Frank M. Mason, 42, vice president, **U. S. Electrical Motors Inc.**, and general manager of its Atlantic plant in **Milford, Conn.**, died Dec. 27.

G. M. Gillen, 50, manager of mar-

keting service in the market development department of **Lukens Steel Co.**, Coatesville, Pa., died Jan. 7.

George W. Abel, 64, general superintendent, **Indiana Harbor Plant**, **Youngstown Sheet & Tube Co.**, died Jan. 12 at his home in Chicago.

Crawford B. Murton, 66, retired works manager of **Inland Steel Co.'s** Chicago Hts., Ill., plant, died Jan. 5. He retired in 1951.



Special Built Machine for Exacting and Thorough Hydraulic Testing Heavy Duty Gate Valves

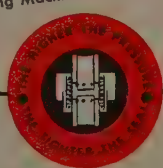
**Quick-As-Wink
Control Valves**

industry wide recognition for unsurpassed dependability

We think steel men know most about steel; rubber industry men know most about rubber; machine builders know most about machines; and valve men know most about valves. So when a large nationally known valve manufacturer chose Quick-As-Wink control valves for the exacting and thorough testing of his own heavy duty valves (see photo) we're pleased — but not surprised, because throughout the steel, rubber, machine building, and most other industries, men with experience usually prefer Quick-As-Wink Control Valves. Positive and fast-acting, every valve is designed and built for maximum air economy and the long, dependable trouble-free service you want in your operations.

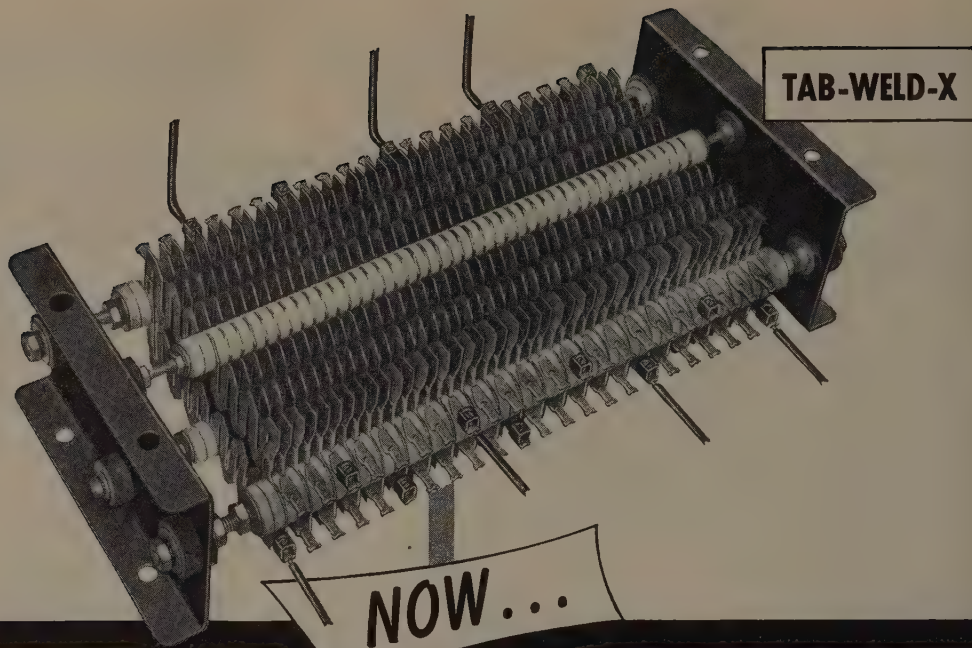


Quick-As-Wink Air and Hydraulic Control Valves that Operate the Testing Machine Shown Above



Quick-As-Wink
AIR AND HYDRAULIC
Control Valves

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Mfd. by C. B. HUNT & SON, INC., 1911 East Pershing St., Salem, Ohio



NOW...

A COMPLETE LINE OF WELDED RESISTOR SECTIONS

up to 150 amperes continuous capacity without internal paralleling

TAB-WELD



SPECIFY EC&M BULLETIN 942
EC&M TAB-WELD RESISTORS

No Crowding . . . $\frac{3}{8}$ " to $\frac{3}{4}$ " spacing between grids
in EC&M Types TW and TW-X Sections

In both styles of EC&M Welded Plate Resistor Sections, heat radiation is *efficient*. Spacing between grids is a minimum of $\frac{3}{8}$ " on the smallest grid size up to a $\frac{3}{4}$ " maximum on the 150-ampere continuous capacity section.

Likewise efficiently designed are the individual grids, resulting in completely covering a plant's requirements with a *minimum* of sizes.

Remember, also, these EC&M TAB-WELD Resistors may be used "off-the-storeroom shelf." Many taps make on-the-job connections easy and readily permit small adjustments in resistance-value.



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A. A. Goodman, manager, quality control, Yale & Towne Mfg. Co. leads symposium introducing surface finish control

How You Can ... SPECIFY SURFACE FINISHES

When you set dimensions and tolerances on length, width and breadth—everyone knows what you mean. Now you can also be understood when you specify surface finish

SURFACE FINISH interpretation varies widely from plant to plant, between departments in any one plant and even between any two individuals in one department.

It's the old question of just how smooth is smooth.

No greater differences of opinion over any matching procedure exist than when the subject of roughness, smoothness or surface quality of a finish is under discussion. Everyone has his own opinion. Discussions often end in arguments.

Here's what one company is doing to clarify the meaning of surface finish as a part of their quality control program.

At Yale & Towne Mfg. Co. surface finishes are standardized. This does not mean that better finishes are produced. It does mean that they can ascertain, without differences of opinion, when a desired finish is being produced.

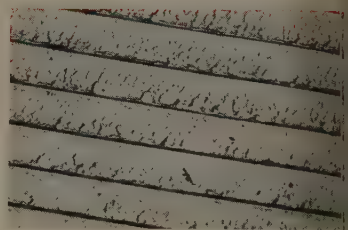
Here's How—Surface finish control depends on methods of conveying information on drawings and in specifications. The surface finish symbol on a drawing means that the surface touched by the

heel of the symbol is to be finished to correspond to a master finish block of a similar roughness.

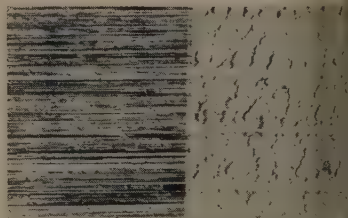
The number shown in the symbol means that the desired surface is to correspond to the microinch finish block of that number. For example, if the number, 63, is shown in the symbol the finish must correspond to the 63 microinch master finish block.

The microinch designations used at Yale & Towne are 2, 4, 8, 16, 32, 63, 125, 250, 500, 1000. These are standard for many industries. Tolerances on any specified finish are interpreted usually as any finish better than specified and up to 10 per cent rougher. Thus, the 63 microinch finish symbolized above is acceptable if the Profilometer reading is anywhere between one microinch and 70 microinches.

In some rare cases it may be desirable to have a finish with a specified roughness and not any smoother. The symbol will then have two numbers, such as —, 63 which means no smoother than 32



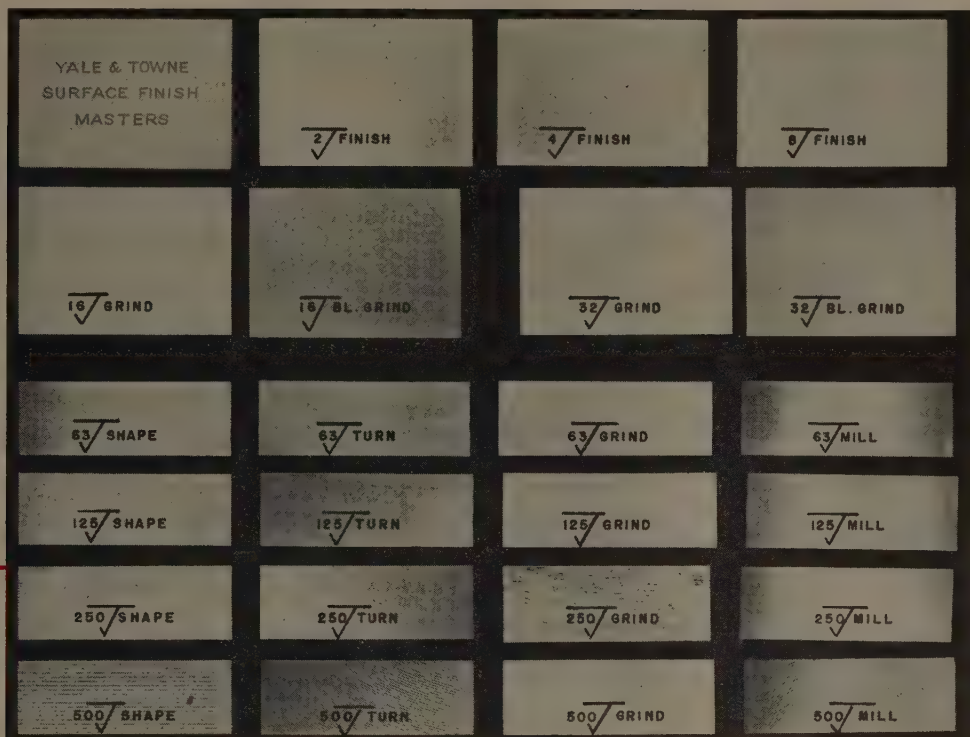
(Top) Turned surface magnified 16 times shows tool furrows and edge (bottom) profile magnified 62 times



Shaped surface (right) has evenly spaced tool grooves; ground surface (left) has no consistent surface pattern



Profile of turned journal before grinding. If used as a load-bearing surface tremendous pressures would build up at peaks to rupture oil film. Bearing failure would follow shortly



Standard finish blocks produced by same or nearest similar method to that used in the operation are preferred

inch and no rougher than 63
inch. Unless it is specifically
d that the finish is to be pro-
l by a certain method, such as
ing, shaping, polishing, turn-
the method used is left to the
etion of the shop personnel.

Standard finish blocks used are
recognized standard blocks.
follows the practice estab-
l for dimensional blocks
larly known as Jo-blocks)
are supplied by different
ufacturers.

Standard finish blocks are pro-
l by various machining meth-
It is preferable to use the
that is produced by the same
the most nearest similar)
od to the one used for the
cular operation.

le finds that running the
rnail backwards over the
ard block and over the work
s as a good comparator to
with. If any doubt exists a
uring instrument, such as the
lometer, is used to produce
erical values. Actual measure-
s provide assurance that fin-
specifications are being met.

The table shown below serves
as a guide in correlating Yale fin-
ish marks with the approximate
corresponding microinch finish
designation.

Surface Markings—Machine fin-
ish refers to the smoothness or
roughness of the irregularities pro-
duced on the surface of the par-
ent material by the cutting action

of the method of material removal.
Turning and grinding are two ex-
amples.

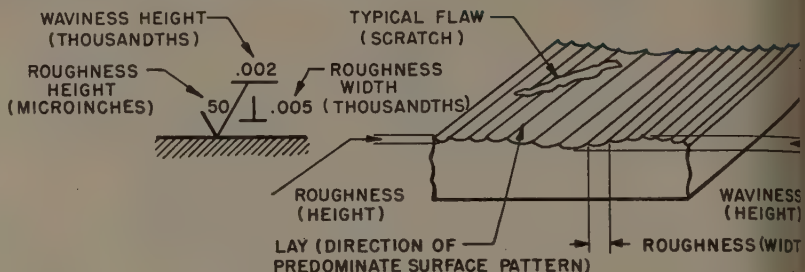
Turned, shaped, milled, broached,
drilled and reamed finishes are
produced by a pointed tool mov-
ing forward. As the point of the
tool is traversed across the work,
it will produce a surface leaving
its own peculiar markings.

Y. & T. DRAWING FINISH MARKS	MICROINCH SYMBOL	DESCRIPTION
\mathcal{J}	$125\sqrt{\quad}$	GOOD MACHINE FINISH
$\mathcal{J}\mathcal{J}$	$63\sqrt{\quad}$	FINE MACHINE FINISH
G	$32\sqrt{\quad}$	FINE GROUND FINISH
GG	$16\sqrt{\quad}$	EXTRA FINE GROUND FINISH
RG	$500\sqrt{\quad}$	HAND GRIND
RT	$500\sqrt{\quad}$	ROUGH TURN

This table is a guide in correlating Yale & Towne finish marks al-
ready in use with their corresponding microinch finish designations

SURFACE FINISH TERMINOLOGY

With the adoption of standard finish designations rapidly becoming universal, certain terminology is recognized as official. Here the most commonly used ones are explained



LAY—Direction of the predominant surface pattern. On a turned or ground cylindrical object, the lay is circumferential. A surface grinder leaves a lay duplicating the direction of the table motion. A shaped surface's lay would duplicate the direction of the tool motion. A lapped surface, being a multimotion produced surface has no predominate pattern and thus has no lay. The drawing symbols for lay are indicated by the lay symbol placed under the extension to the right of the long leg as illustrated.

When measuring the surface roughness with a Profilometer or similar instrument (surface analyzer) measurements should be taken in the direction of the lay wherever possible, unless for special reasons it is specified otherwise.

ROUGHNESS—A measure of the height and width of finely spaced surface irregularities. On surfaces produced by machining and abrading operations (grinding, lapping etc.) the irregularities produced by the cutting action of tool edges and abrasive grains and by the feed of the machine tool are roughness. Roughness may be considered as superimposed on a wavy surface.

Roughness is a recurrent irregularity typical of the surface. It normally covers the total surface, determines its suitability for specific applications. As already noted, roughness *width* is specified to the *right* of the *lay* symbol. Roughness *height* is measured in microinches, (mil-

lionths) of an inch and is specified in the *left* hand leg of the symbol.

Roughness height is the one used predominately to specify the surface finish desired. It is the symbol you will find used in the majority of cases where any surface finish designation is given.

MICROINCH—Equals one millionth of an inch. Thus 1 microinch equals 0.000063-inch.

WAVINESS—A measure of surface irregularities which are of greater spacing (pitch) than roughness. Waviness may be viewed as superimposed on a theoretically perfect surface. Such irregularities may result from machine or work deflections, vibrations, etc. Irregularities of similar geometry may occur due to warping or strains.

Waviness has two ratings, width and height, and in these the width is not usually given on drawings. Waviness height is specified in thousandths of an inch (0.0, 0.005, 0.009, etc.) These measurements are maximum peak to valley height. Waviness usually takes the form of smoothly rounded curves.

Waviness may be measured by a straight edge for coarse or large heights. For finer or close tolerances, dial indicator is required. The dial indicator should be equipped with a 1/32-inch radiused point or a 1/16-inch ball. Waviness will be the maximum reading

Regardless of what method of tooling is used, removal of stock by a pointed tool follows certain consistencies. The cutting tool does not actually cut the metal, in the true sense of the word. Instead, it fractures and pushes the metal off leaving behind it a surface consisting of furrows each of which in itself contains an infinite number of hills and valleys whose surfaces consist of fragmented material.

The mechanism can be visualized something like this: During the machining operation, a build-up edge of highly compressed metal forms in front of the tool. When the stress of the tool becomes great enough, this compressed material shears off and forms a part

of the chip. Another compressed edge builds up immediately and is in turn sheared off. This process continues as long as the tool is cutting. The surface left in back of the tool therefore consists of infinite fragments of built up edge.

Pushes Them Down — High speeds and feeds result in tremendous pressures at the point of contact which will burnish the surface and give a high polish even to a very rough cut. This polish, however, does not eliminate the rough surface and the fragmented metal edges. It simply pushes them down, smears, and burnishes them.

Smoother — A ground surface generally has a higher polish than a tooled finish. The high heat gen-

erated by the grinding wheel at the point of contact approaches the melting point of the material being ground and is sufficient to smear, flow and plasticize the tooled fragmented metal. This gives the finish with a high polish and mirror-like reflecting surface.

Under a microscope, however, ground and even a honed surface will appear rough. A bright surface on metal is not necessarily a smooth one. A hand lapped extra fine finish will not possess the eye appeal of a much rougher but shinier finish.

How does a ground and shaped surface compare? The shaped surface has definite, evenly spaced tooled grooves covered with tooled fragmented, sharp edged metal



to boundary line of surface indicated by the symbol



Angular in both directions to edge



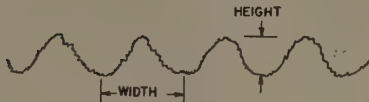
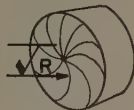
Finish of surface touched by heel of symbol corresponds to 63 micro-inch master finish block



Angular to boundary line of surface indicated by symbol



Approximately radial relative to center as designated



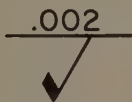
Surface profile with waviness, height and width shown. Roughness superimposed on waviness



Directional example: Lapped roughness may be measured in any direction



Approximately circular relative to center: Example: Phonograph finish on a flange



Waviness height value, when required, is placed above the horizontal extension line

LAY DESIGNATION

the minimum one over a travel of one-inch un-

surface.
blocks and certain ultra-flat surfaces such as collars are measured for waviness by using a monochromatic light and quartz optical flats which measure only small surface variations from the nominal. Waviness value in inches may be additionally specified, required, by a percentage bluing note such as 90 indicating that the surface shall show a certain percent contact when coated and rubbed against

a surface plate, straight edge, bluing gage or mating surface.

Waviness height value is placed about the horizontal extension line on the symbol.

FLAWS—Irregularities which occur at one place or at relatively infrequent intervals in the surface. Example: Scratch, ridge, hole, peak, crack or check. Effect of flaws on the usefulness and usability of a part is not considered at all by the general microinch finish. There is no symbol for flaws.

The pitch of these grooves is governed by the feed and may be considered as consistent. These grooves as a rule extend the full length of the workpiece as shown in the photograph.

The ground surface shows a definite pattern. The grooves are parallel together, the groove or ridge length is less, and individual abrasive grains cut their own deeper, shallower, wider or narrower as the case may be. There is no definite or consistent pitch or width to these grooves depending; the surface produced consists of fine but torn, jagged peaks and valleys.

Important — Functional requirements for parts generally require a certain range of surface

finishes to be satisfactory. A number of machining operations may be used within that range. The choice may be based on the equipment available within the shop or perhaps on the machine needed to produce the component.

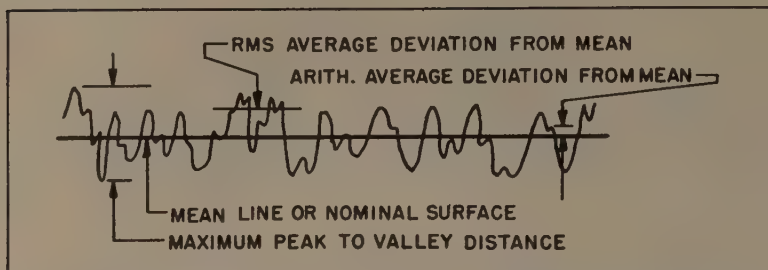
As modern machinery of all types is progressing towards smaller, speedier more powerful, lighter units that will require less or even no wear full recognition must be given to the importance of surface roughness.

An area that must withstand great strain should have a good surface finish. Among such areas are radii at change of section diameter in spindles and gears. Where the stresses are exceptionally high, any appreciable rough-

ness will increase the stress concentration considerably and failure may result. Good surface finish allows maximum bearing area to be obtained and small unit pressure.

How To Measure—The instrument used for surface finish measurements at Yale & Towne is the Profilometer. This equipment consists essentially of a diamond point with a spherical radius of 0.0005-inch embodied in a tracer pickup that is moved over the surface being measured. It transmits the surface irregularities to an amplifier that shows, on an electric meter, the surface roughness in microinches root-mean-square.

It would be comparatively simple to measure the roughness if



Rms average of all the peaks and valleys is about one-third that of the maximum peak and valley measurements as illustrated for this surface

the surface formed a true geometric wave such as a sine wave. The peak to valley height in microinches would suffice for most cases.

However, surfaces do not run that true and the peak to valley dimensions would be difficult to establish because of the ever varying assortment of peaks and valleys encountered. The mechanical engineering societies have decided that a more practical mode of specification is a value given to the deviation, plus or minus, of these hills and valleys to a theoretical nominal or mean surface line. This can be likened to the pitch diameter on a thread or gear.

Figures Can Lie—An arithmetical mean would not be a true picture because engineers are more concerned about the damage the higher or extreme peaks may do than the small ones. Thus, it is important to add more weight to the major peak measurements than the minor ones. A root-mean-square average gives this kind of a picture.

Wavy line, A-B, in illustration, represents a minute portion (two waves only) of the actual profile of a machined surface. The rms value is calculated by first drawing a straight line parallel to the plane of the surface being measured, at a depth which equally divides the areas between it and the peaks and valleys in the finished surface. This is the mean (or datum) surface line.

Datum line is divided into a number of equal segments and each segment is measured and tabulated. Each value is squared and the square root of the average (mean square) is the root-mean-square of the surface roughness.

The rms value is larger than the arithmetical average.

Rms Profilometer readings are not peak to valley readings but average or mean values. These Profilometer rms readings can be translated to approximate peak to valley values if desired by multiplying rms readings by 3.5.

On surfaces measured by a Brush Analyzer, which measures the peak to valley height in microinches, dividing by 3.5 gives the equivalent to a Profilometer reading.

May Cost No More—Better surface finishes are all too often confused with more expensive finishes. Such is not the case. A 4 microinch finish, properly tooled up, may cost far less than a 32 microinch finish. Attention paid to the best method of metal removal will pay-off in better finishes at lower cost.

One manufacturer was finishing huge water wheel thrust collars by machine lapping to a "GG

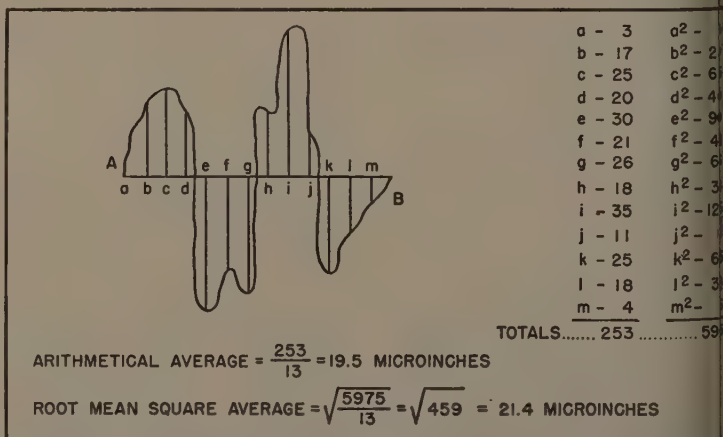
polish" finish. After lapping some 80 hours the collar was fully accepted and the finish was the order of 32 microinches. It was found by measuring the surface every 15 minutes with a Profilometer that the finish became progressively better. After 8 hours the finish was 8 microinches. At that point finish became wo-

Lapping removes the microinches layer of fractured, smeared metal which previously is left by the cutting tool on the base metal. The fractured layer will not necessarily be destroyed nor will it be completely removed from the base metal. It will, however, be crushed, cut, broken and otherwise disintegrated and removed by the lapping operation.

As the lapping continues, a certain point is reached when the dominant amount of these peaks are leveled off and that is the time to stop. The finish at that point is as good as is desired. Continuing lapping will cut into the base metal and from that point on the finish becomes rougher instead of better. Prolonged lapping will again result in rotation, better, worse, or worse, etc. finishes.

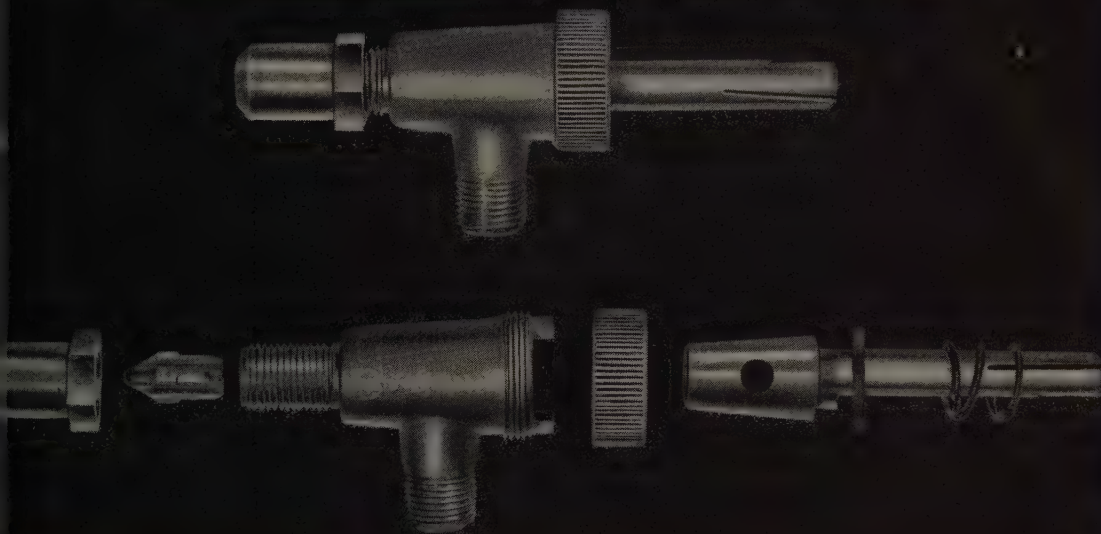
By applying a precise surface finish instrument to this job, the manufacturer now gets in one-tenth the time a finish of one-fourth the former roughness.

There can be no argument about the characteristics of the surface finish in this case since the instrument gives a precise measurement of the surface roughness.



Wavy line, AB, above represents a minute portion (two waves only) of the actual profile of a machined surface. Rms value is calculated as shown

LINCOLN FINDS Brass is Best



Kitchen range burner valve by Lincoln Brass Works, Inc., Detroit 16, Mich. Two different brasses are used in this valve, which is entirely of brass except for the washer and spring. Lincoln also makes valves for heaters and furnaces; flow, drain and shut-off valves for gasoline lines; shut-off valves for agricultural sprayers, and a wide variety of tube and pipe fittings, all entirely or chiefly of free-cutting brass rod and free-machining brass forgings.

Mr. D. E. DuPerow, Vice-President of Lincoln Brass Works, Inc., recently said: "Thirty-six years of brass use by Lincoln and complete acceptance by the trade is the best reason I can think of for brass superiority. If there had been any material better for our purpose, less expensive to fabricate, and more desirable to our customers, we would be using it now."

Brass has many desirable characteristics. Here are five of them that are important in Lincoln valves and fittings: 1, corrosion resistance, which means no plating is required. 2, high speed precision machining for high output, lower costs. 3, sound, non-porous

structure of rod and forgings. 4, smooth performance; brass holds lubricants. 5, customer satisfaction; gas range burner valves pass the cycling test of being raised to 425°F. and back to room temperature a minimum of 10,000 times without seizure, loss of free operation, or leakage.

There are many other items besides valves that can profitably make use of the fine qualities of Revere Brass. The Revere Technical Advisory Service will gladly cooperate with manufacturers on the selection of the correct brass and its fabrication. Just call the nearest Revere Sales Office; see your telephone directory. Or write direct.

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Untangle Metal Specifications

NEW CROSS INDEX of chemically equivalent specifications will save production and engineering time. It will help you correlate industrial and military identifications

By DR. ALLEN G. GRAY
Technical Editor

DO YOU need help in untangling steel and nonferrous metal specifications?

Is confusion about the various specification systems costing you valuable production and engineering time? Perhaps you need a place to turn for leads on substitution of materials.

Then you will be interested in the new Cross Index. It provides a reference by which the material compositions of a wide variety of specifications may be compared.

Toward Common Denominator—Value of a common denominator to which all specifications can be reduced on the basis of composition was first realized at the outset of World War II.

At that time the material requirements program of World War II CMP, made wide and intensive use of specifications necessary. Also, the military nature of many of the products introduced the specifications used by the various

armed services to a degree never before attained. Keep in mind this fact: Each of the services has its own specification system which in many cases leads to duplication.

That is, one branch may have several numbers or terms to indicate a particular alloy and another branch still different numbers to indicate the same alloy. In turn, this same alloy may have still a different designation by each of the several engineering societies.

This situation exists for almost every widely used alloy.

Here's the Start—To reduce the confusion resulting from the numerous specifications systems, a meeting was called by the statistical section of the War Department in June, 1942, to discuss the possibility of a cross index and coding system proposed by the Air Force and industrial concerns such as General Motors, Chrysler, and Ford. The result: General Motors assumed the major responsibility

for developing a Cross Index covering all commonly used specifications.

The first Cross Index appeared in 1943. A revision was made available in March 1945.

New Cross Index—Work on a more complete and revised Cross Index was started early in 1952 by the General Motors engineering staff under contract with the Office of Standardization in cooperation with a joint Army-Navy-Air Force group. Late 1952 saw approval of the manual by the Office of Standardization, Department of Defense.

Basis of the Cross Index is a single five-digit code number for ferrous and nonferrous alloys of similar composition covered by a variety of specifications. It thus provides a reference by which the material compositions of different specifications may be compared.

The materials covered by the specifications included in the new

TABLE I
CODE NUMBERS USED FOR CLASSIFICATION OF METALS AND ALLOYS IN CROSS-INDEX OF CHEMICALLY EQUIVALENT SPECIFICATIONS.

01000-09999—Steel code numbers. Absence of suffix indicates nominal composition is same as corresponding SAE-AISI specifications. The letter "T" suffixed to a code number indicates that such a number does not appear in the SAE-AISI list. In order to provide a uniform five-digit system a zero has been placed in front of the standard SAE-AISI designations.

The range 00000-00999 has been reserved for assignment and internal use by using agencies to cover analyses for which there are no code numbers presently assigned.

10000-12500—Copper and Copper-base Alloys.
13000-13500—Nickel and Nickel-base Alloys.
13501-13600—Cobalt and Cobalt-base Alloys.
14000-14500—Lead and tin and alloys.
14750-14850—Silver and Silver-base Alloys.
20000-20999—Aluminum and Aluminum-base Alloys.
21000-21500—Magnesium and Magnesium-base Alloys.
23500-23600—Bismuth or Cadmium and Alloys.
23800-23850—Antimony and Antimony-base Alloys.
23900-23950—Platinum and Platinum-base Alloys.

s Index are the ferrous and
rrous metals and alloys. In
cases specifications for prod-
such as rivets, piston rings,
are also given. Such products
cluded only in those instances
e the specification lists in
l the material composition
the parts rather than calling
specific material.

the Cross Index each specifi-
n is assigned a code or group
er which is common to all
specifications for material of
ar chemical composition. For
oses of general classification
e metals and alloys, blocks of
numbers used are as shown in
e I.

Chemical Composition — In the
part of the Cross Index,
ps of specifications for ma-
l of similar chemical composi-
are arranged in the numerical
r of the code number assigned
each group of such specifica-
s. Four items of information
listed for each specification:

Specification designation or
bol.

General form or shape of ma-
l specified.

The initial which designates
agency which issued the specifi-
cation.

Detail chemical composition
pressed as percentage by weight
the material required by the
ification.

Specifications Listed—The sec-
part of the Cross Index lists
ifications for ferrous and non-
ous metals. The specifications
ed by each agency are listed
arately. Table II shows specifi-
ons included in the Cross In-
l. They are listed in alphabetical
numerical order along with the
owing information:

Specification designation or
bol.

Code number which has been
igned and which serves to index
specification in Part I.

The complete title of the spec-
ication.

Federal specifications are pre-
ed for supplies used by the
eral departments and independ-
establishments of the federal
ernment. The specification sym-
used is composed of three ele-
nts: 1. The group of materials
supplies to which the specifica-
n relates; 2. the initial letter of



Industry Comments Indicate Need For This Type of Cross-Index

Purchasing Agent, Electrical Mfg. Co.—

"...very helpful in the substitution
of materials. Would appreciate two
or three copies for our Planning
Department."

Superintendent, Aircraft Manufacturer:

"A wonderful source of reference in
the Production Development Lab-
oratory Chemical Section."

West Coast Manufacturer—

"It will be used as an aid in ma-
terial call outs. If most modern
materials and identifications are
incorporated, it will be of great
help."

Chief Metallurgist, Automotive Parts Company—

"We are interested in this Speci-
fications Handbook as a reference
guide in running ferrous and non-
ferrous analysis."

Manager, Steel Contractor

"It will be a great help in identifi-
ing materials specified in Govern-
ment contracts on which we esti-
mate from time to time."

Purchasing Agent, Camera Mfg. Co.—

"This handbook should prove most
helpful in checking on various Gov-
ernment specifications we are re-
quired to meet in handling our
Government work."

President, Machinery Manufacturer—

"After seeing concrete examples of
the use of this cross-index, we feel
an urgent need for it."

Engineering Aide, Naval Shipyard—

"This cross-index will be of inestim-
able value in identifying various
metals and will be used extensively

in the U. S. Naval Shipyard Weld-
ing Engineering Section."

Owner, Heat Treating Co.—

"We are engaged in the commercial
heat treating business and have
been trying to locate information
which would give us the compari-
sons of American Society of Testing
Materials Specifications to such
steels as SAE, AISI, etc."

Vice-President, Parts Manufacturer—

"...should prove to be the most
valuable and essential volume in
our Specifications Library. . ."

President, Machine Tool Co.—

"We have had considerable diffi-
culty obtaining the correlation be-
tween industrial specifications and
army code specifications. Cross-in-
dex will be of tremendous help."

Engineering Firm—

"We have three foundries as clients
and have been searching for such an
outstanding reference guide that is
of great importance in our materi-
als reference problems. We are
doing substantial Government work
and your booklet is the best solu-
tion to this Specification Coding."

Manager, Steel Warehouse—

"We receive numerous calls over our
city desk, inquiring about Govern-
ment Specifications. We find there
are a number of new specifications
of which we have no record. . ."

Vice-President, New England Manufacturer—

"We are urgently in need of your
publication cross-indexing chemi-
cally equivalent specifications and
identifying ferrous and nonferrous
alloy codes. We are sure this would
facilitate our order department in
checking various Army and Navy
Specifications for steel."

PART II—SPECIFICATION CROSS-INDEX MILITARY SPECIFICATIONS

Specification		Code Number	Specification Title	Supersedes
Number	Type, Grade, or Class			
MIL-S-11310 (Ord)	CS1005	01005	Steel; Bars; For Cold Shaping	
	CS1012	01012	"	
	CS1017	01017	"	
	CS1018	01018	"	
	CS1020	01020	"	
	CS1022	01022	"	
	CS1025	01025	"	
	CS1030	01030	"	
MIL-S-15073 (Bu-Ord)	CS1040	01040	Steel Alloy (Cr. & Ni-Cr); Bars, Forgings & Finished Pieces	O.S. 477
MIL-S-15083 (Ships)	Cl. 4	05188T	"	
	Cl. Cw	01030	Steel, Castings	ND-4981
	Cl. B	01025	"	
	Cl. A70	01030	"	
	Cl. A80	"	"	
	Cl. A90	"	"	
	Cl. A100	"	"	
MIL-S-15395 (Ships)	Gr. 0	10925	Silver-Base Brazing Alloy	ND-47813e
	Gr. I	14830	"	
	Gr. II	14825	"	
	Gr. III	10900	"	
	Gr. IV	14800	"	
	Gr. V	14815	"	
	Gr. VI	14822	"	
	Gr. VII	14805	"	
	Gr. VIII	14807	"	
MIL-S-15464 (Ships)	Cl. 1	04110T	Steel, Alloy, Cr.	
	Cl. 2	04212T	"	
MIL-S-16113 (Ships)	Gr. M	01025	Steel, Plate, Str.	
	Gr. HT	01019	"	

CROSS-INDEX

In Part I the group of specifications for material of similar composition are arranged in numerical order of assigned code number. Part II lists specifications issued by each agency.

MIL-S-16124 (Bu-Ord)	Cl. 1a	01117	Steel, Free Cut	
	Cl. 1b	01118	"	
	Cl. 2	01137	"	
MIL-S-16218 (Ships)	Gr. HY-65	04617	Steel, Plate, Struct. High Yield Strength	(To 1-1/4 in.)
	Gr. HY-80	04030T	"	(Over 1-1/4 in.)
			"	(To 1-1/4 in.)
			"	(Over 1-1/4 in.)
			"	(To 1-1/4 in.)
			"	(Over 1-1/4 in.)



the title of the material; and 3. a serial number determined by the alphabetical location of the title. The groups included in the Cross Index are "QQ" and "WW".

Specifications listed in the U. S. Army specifications section are those which have been issued by the technical services of the De-

partment of the Army. U. S. Air Force specifications are also included in the Cross Index.

Specifications of the U. S. Navy given in the Cross Index consist of the regular Navy Department specifications and various interim specifications of the several bureaus of the Navy Department.

Army-Navy Aeronautical series of specifications are issued by the Aeronautical Standards Group. There were two types of numbers for ANA specifications. The first based on the Federal Catalog is no longer being assigned. The second is similar to the first, but simplified. Examples: AN-WW-T-833, AN-T-33. Revised specifications supersede previous issues of the specifications together with all amendments. Such revisions are indicated by a letter suffix to the original number. Thus, AN-G-2b,

where "b" indicates the second revision.

Military specifications section includes those which have been issued by the Munitions Board Standards Agency and are composed of Military specifications (MIL) and Joint Army-Navy specifications (JAN).

Non-Military Too — The standards of the American Society for Testing Materials given in the Cross Index are those of the ferrous and nonferrous groups. The specification designation of the ASTM regular standards is composed of three parts: 1. A letter indicating the general classification—"A" denotes ferrous material and "B" nonferrous material, 2. The serial number, which like the letter is permanent, 3. The number following the dash indicates the year of adoption or year of last revision.

PART I—CHEMICAL ANALYSIS OF SPECIFICATIONS FERROUS ALLOYS

CROSS INDEX OF CHEMICALLY EQUIVALENT SPECIFICATIONS

Code Number	Specification	Form	Chemical Analysis
01002T	44P1k, Cl. A, B, & C 45F11 (INT), Wrought Steel WW-T-731b, Comp. B	Pipe Fittings, Pipes & Tubes Tubes Tubes Iron sheet	N C .08 Max.; Mn .08 Max. N C .08 Max.; Mn .08 Max. P C .03 Max.; Mn .03 Max.; P .02 Max.; S .045 Max. T C .03 Max.; Mn .03 Max.; P .02 Max.; S .045 Max. T C .03 Max.; Mn .03 Max.; P .02 Max.; S .045 Max. C C + Mn + Si + S + P + .15 Max.
01005	MIL-S-11310 (ORD), CS1005 MIL-R-808 (Ships), Cl. 1, Ty. C AMS-5030A 48-5A, Gr. WD1005 A253-51T, Ty. A A253-51T, Ty. A (Alt.) A253-51T, Ty. B A83-46, Ty. B (Alt.)	Steel Rods Rods, Welding Rods, Welding Wire, Welding Wire Pipe Pipe Tubes	I C .06 Max.; Mn .35 Max.; P .04 Max.; S .05 Max. J C .06 Max.; Mn .35 Max.; P .04 Max.; S .05 Max.; Si .10 Max. J C .08 Max.; Mn .25 Max.; P .04 Max.; S .04 Max. J C .06 Max.; Mn .25 Max.; P .04 Max.; S .04 Max.; Si .08 Max. M C .06 Max.; Mn .25 Max.; P .04 Max.; S .04 Max.; Si .08 Max. A C .06 Max.; Mn .15 Max.; P .04 Max.; S .04 Max. T C .05 Max.; Mn .35 Max.; P .02 Max.; S .045 Max. T C .05 Max.; Mn .35 Max.; P .02 Max.; S .045 Max.; .20 Min. Cu. T C .05 Max.; Mn .35 Max.; P .02 Max.; S .045 Max.; .05 Min. Mo.; .40 Min. Cu. T C .05 Max.; Mn .35 Max.; P .02 Max.; S .045 Max.; As shown or .20 Min. Cu. as specified or .05-.15 Mo. & .40 Min. Cu. as specified
01006	SAE-1006 AISI-C1006	Carbon Steel Carbon Steel	S C .08 Max.; Mn .25 Min.; .40 Max.; P .04 Max.; S .05 Max.; Si .10 Max. I C .08 Max.; Mn .25 Min.; .40 Max.; P .04 Max.; S .05 Max. Max.; Mn .25 Min.; .40 Max.; P .04 Max.; S .05 Max.; Si .10 Max. Max.; Mn .25 Min.; .50 Max.; P .04 Max.; S .05 Max.; Si .10 Max. Max.; Mn .25 Min.; .50 Max.; P .04 Max.; S .05 Max.

Works Both Ways

separately with the corresponding code
r. Cross reference used code number
y to compare the material composi-
of a wide variety of specifications

11353
JAN 1950

A155-51 is the specification
for "Electric fusion-welded
pipe for high temperature and
pressure service" and was
ad as a standard in 1951.

nonautical Materials specifica-
(AMS) given in the Cross
are those issued by the Aero-
s Division of the Society of
otive Engineers (SAE)
ards Committee. They are
ete procurement specifica-
for materials used in the
acture of aircraft.

ordinated — Chemical and
chemical composition of the mate-
covered by AMS specifications
ordinated so far as possible
SAE general standards for
r materials, but where nec-
y the limits of acceptable com-
on may be more restrictive.
ch cases, effort is made to
these limits within the limits

of basic SAE standard composi-
tions, such as SAE steels. The sym-
bol "AMS" preceding the aeronau-
tical material specification number
is an integral part of the identifi-
cation and is always included in
referring to individual specifica-
tions by number. Revised or amend-
ed specifications are indicated by
letter suffixes. Thus, AMS-4145B
is the second revision of AMS-4145.

Ferrous and nonferrous stand-
ards of the Society of Automotive
Engineers (SAE) are included in
the Cross Index. These standards
in themselves are not complete
procurement specifications as are
the AMS standards. In general, the
SAE standards cover basic indus-
trial materials. In some cases cer-
tain physical requirements are a
part of the standards in addition to
the chemical composition.

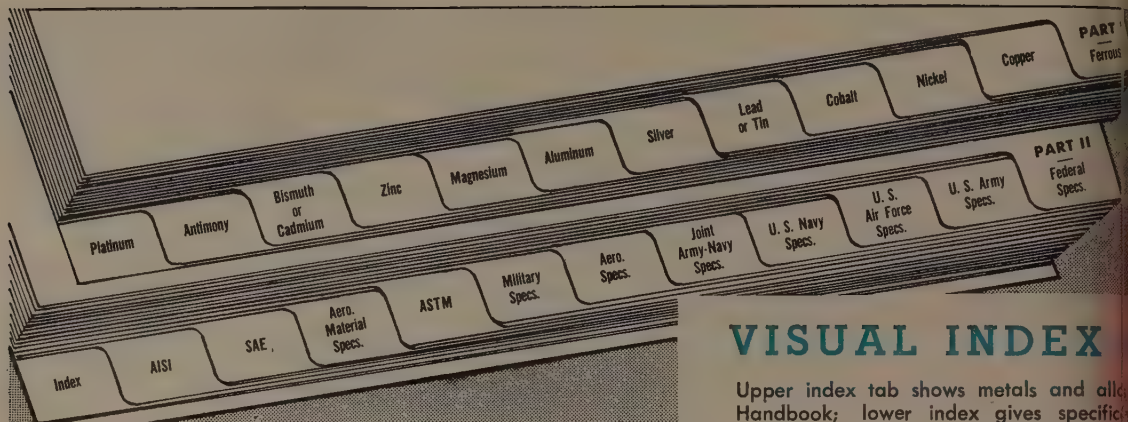
Standards of the AISI given in

the Cross Index are based on pub-
lications of the American Iron &
Steel Institute. The AISI steel num-
bering system is essentially the
same as that of the SAE.

Rounded Off — Work on the
Cross Index also included a compil-
ation of nominal compositions of
materials by code number groups.
These nominal compositions are
those required by specifications in
the extensive first section of the
Cross Index. They are generally
the arithmetical mean of the ele-
ment ranges as specified in the de-
tail specification.

STEEL's Specification Handbook
is based on detailed chemical com-
positions as given in the first sec-
tion of the Cross Index Code and
does not include nominal composi-
tions.

Code numbers used in the Cross
Index may be used in the prepara-



VISUAL INDEX

Upper index tab shows metals and alloys; Handbook; lower index gives specifications.

tion of bills of materials, for submission to the military services, when directed by the procuring service. The assigned code numbers are not intended for and cannot be used in lieu of the specifications themselves for procurement purposes, nor as a specification number. Also, the fact that two or more specifications are represented in the Cross Index by the same code number is no assurance that such specifications cover materials of identical physical properties.

Cross Index Story—Let's take a look now at the human side of the cross index, who worked on it and how it evolved to its present state.

Capt. John Locke of the Army Air Force at Dayton, O., first suggested a uniform code to be used which would identify specifications of similar chemical analysis. Several of the larger manufacturers readily agreed to the need for such a plan. Accordingly, a meeting was held in Washington at the request of Col. W. J. Rusch of the statistical section of the War Department.

Representatives of Ford, Chrysler, Nash, General Motors, SAE, AISI and AMA—Automotive Council for War Production, first met with representatives of the various Army and Navy Services in Washington on June 16, 1942, to discuss the development of a uniform material specification code.

Five Digit Code—It was agreed by those present that a five digit code would be used. The question of who would work up the code and publish the data then arose. Colonel Rusch proposed that inasmuch as Captain Locke was being transferred to another assignment the work should be done by the indus-

try representatives who were already familiar with the program, and that their proposals be reviewed by the trade associations.

General Motors evolved a plan for tabulating the code using punched card equipment which enabled production of the Cross Index code in much less time than had been discussed at the meeting. R. L. McWilliams and L. A. Walsh of General Motors guided the program. B. J. Kelly, who is now engineer in charge of technical data section at General Motors Technical Center, also worked on the project.

Here's How—A standard worksheet form was drawn up and the following information posted to it: 1. Specification number, 2. source of number, that is, whether number was an Army, SAE, ASTM, Navy, etc. specification, 3. actual chemical analysis of the alloy as specified by the above number and 4. a single spaced code to indicate which elements were specified by that number, without regard to the various percentages.

This information was then transferred to a tabulating card, one card for each specification symbol or number. This made possible the quick grouping together of similar alloys irrespective of their number. The first step in the process was sorting electrically on the element code number.

The next operation sorted these decks electrically according to the percentage of the elements present and grouped them into decks of the same percentage composition. A tabulation of these cards was then printed, automatically reproducing the complete story of each speci-

cation as it appeared on the original worksheet, but sorted in a group of chemically equivalent specifications. This information was then arranged in cross index form for ready use.

Bigger and Better—Hundreds of letters sent in by users of the two versions of the Cross Index attested to useful purpose it served. However, a need was felt for a revised and enlarged cross-index.

On Dec. 27, 1951 a conference was held by the Standards Agency of the Munitions Board to develop plans for a new Cross Index. Chairman of this meeting was B. R. Rzewski, Munitions Board Standards Agency, of which Russel A. Moore is director.

The outcome: R. L. McWilliams of General Motors Corp., sponsored the development of a new Cross Index in co-operation with a joint Army-Navy-Air group. Working closely with General Motors were Maj. W. S. Ferguson and B. Sullivan, Production Research Division, Air Materiel Command, Wright-Patterson Air Force Base, Dayton.

TABLE II SPECIFICATIONS INCLUDED IN THE CROSS INDEX

- A: United States
- B: Aeronautical Standards Group
- C: United States Air Force
- F: Federal
- I: American Iron & Steel Institute
- J: MIL and JAN Specifications
- M: Aeronautical Materials Standards (SAE)
- N: U. S. Navy
- S: Society of Automotive Engineers
- T: American Society for Testing Materials

380
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VISUAL
INDEX

STEEL

SPECIFICATIONS HANDBOOK

Cross-Index of Chemically Equivalent
Specifications and Identification Code
for Ferrous and Nonferrous Alloys

Based on work conducted
by the Engineering Staff
of General Motors under
the direction of a Joint
Army - Navy - Air Force
group. The project was
sponsored by the Office of
Standardization, Depart-
ment of Defense.

SPECIFICATIONS CROSS-INDEX

SAE
AISI
ASTM
AERONAUTICAL
FEDERAL
MILITARY
ARMY
NAVY
JOINT ARMY NAVY
AIR FORCE

METALS - ALLOYS CROSS-INDEX

FERROUS
COPPER
NICKEL
COBALT
SILVER
ZINC
MAGNESIUM
BISMUTH
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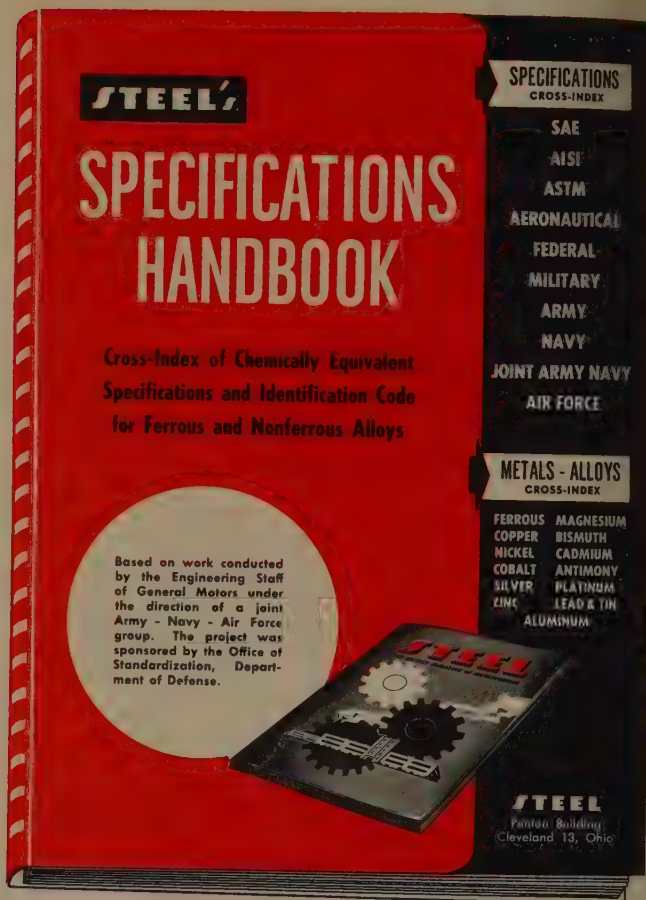
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Western Steelmaker Reduces Masonry Man-Hours

Suspended rammed or castable refractories substituted for sprung arch or suspended brick construction on open hearths increase production and extend life

By R. RUSSELL FAYLES
Superintendent Refractories and Fuel
Lukens Steel Co.
Coatesville, Pa.

Rapid growth in the use of rammed and castable materials for plant service marks a present trend in the refractory field. These materials possess high-temperature capabilities, adequate strength and good expansion characteristics.

A review of practices with these products at the plant of the Lukens Steel Co., Coatesville, Pa., probably will establish a pattern similar to that of other companies, differing only in degree or intensity. The first use of plastics came in the late 30's with the adoption of plastic chrome ore for open-hearth linings. The old, conventional brick door lining with its 10-year life was converted to the studied, rammed, and steam-dried plastic chrome ore lining which now lasts upwards of 110 heats per lining. Experiments with various lining methods and materials have been many and varied but, up to the present, plastic chrome ore has rendered the superior service. Some castables for this service are now undergoing trial but factual data are insufficient to establish any conclusions.

Speeds Bottom-Making — Rammed materials for bottom construction also began in the late 30's and included both plastic chrome ore and magnesia materials in subhearth areas. Lukens has used both types of refractories for bottom service on all new open-hearth bottoms installed since 1940. Gradually, the application of this general type of material has been extended, until now high magnesia, rammed refractories are used for intensive areas of the hearth. Gone are the days of lengthy bottom sinking when magnesite was the preferred bottom material. Valuable time has been saved and additional steel produced by rapid bottom-making with rammed

hearth materials. The large number of rammed open-hearth bottoms already installed or contemplated is indisputable evidence of the acceptance of rammed refractories for this important furnace service.

Miscellaneous uses for rammed or castable refractories in open-hearth service constitute an interesting although not too important item. Because of varying shop factors, such uses are generally spotty and cannot be copied except with caution. Some that come to mind are special linings for tapping spouts, facings for bridgewalls, burner port coverings, and others. Gun-emplaced refractories used for various points of furnace maintenance have also enjoyed varying degrees of success, depending on shop conditions. Theoretically, such an operation offers definite value to any plant. However, a combination of indifferent refractory performance, charging floor nuisance, and furnace downtime have limited its use. Lukens is employing the refractory gun for spot repairs to prolong furnace life or postpone repairs and also to spray regenerator roofs to reduce air infiltration. Gunned refractories of our own making are being used in an effort to improve both the shooting operation and the performance of the refractory.

Undergoes Transition—Most of the foregoing is a prelude to the major campaign now in effect. Systematically throughout the entire plant, sprung arch or suspended brick constructions are being eliminated in favor of suspended rammed or castable refractories wherever possible. In addition, probing is being done into the possibilities of substituting these materials for soaking pit walls and other areas involving firebrick construction. This plan has been

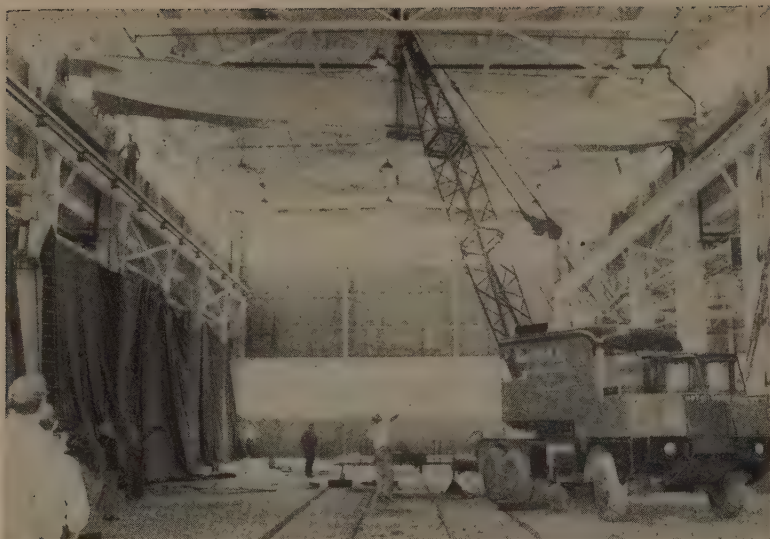
motivated by a single purpose, namely, to reduce masonry man-hour requirements to the lowest possible level.

Because the plant is bound down by a bricklayer shortage and an inability to attract apprentices, plans have been directed along the lines that our masonry crews can utilize nearly all their efforts toward rebuilding open-hearth furnaces. In conjunction with this plan, the thesis was developed that unskilled labor can satisfactorily install these special refractories.

At present, 24 soaking pit covers, four ingot heating furnace roofs, seven reheating or heat treating furnace roofs and three open-hearth furnace fantail roofs are constructed of rammed or castable refractories. Plans specify that all new miscellaneous heating furnaces must have plastic or castable roofs for the original installations. Slowly but surely we are proceeding to the point where almost all our masonry hours can be devoted to open-hearth work and appreciably speed up furnace rebuild time.

The entire program has proved the new suspensions outlast the old types from two to five times and so reduce maintenance costs and outage times as to show a tidy cost saving in every case. Thus, the whole procedure is pleasing top management costwise, our operating supervision by reducing delays, and the refractory department by easing our bricklayer shortage to a marked degree.

Trial Yields Results — Open-hearth rammed fantail roof construction was of secondary interest when the program was inaugurated, but success in other parts of the plant prompted a calculated risk trial on a single open-hearth furnace. This initial installation was made on a 135-ton furnace originally built for 75 tons and



New Building Readied for Press Brake Work

One crane helps build another in this new building at Cleveland Crane & Engineering Co., Wickliffe, O. Shown above is a 25-ton Lorain Moto-Crane placing a 12-ton overhead crane girder on its tramrails 35 feet above the floor. The overhead crane will be used to handle press brakes built by the Wickliffe firm

having two regenerator chambers at each end (producer gas fired originally; now oil fired). The division wall between the chambers extended to the slag pocket area and created rather restricted, crooked fantail openings into the checker areas. The roofs were entirely of sprung arch construction, using semisilica brick throughout. The fantail roof zones were prone to air leakage and had rather high maintenance costs. Extensive repair or complete replacement were usually necessary within 500 heats and embarrassing furnace shutdowns were sometimes required when the arch in the sidewall at the juncture of the wall and fantail collapsed.

Redesign called for the elimination of the central division wall from the slag pocket area to a point 7 feet beyond the checker bridgewall. The entire fantail roof from this point to the "nose" at its junction with the vertical uptake wall and a short distance up the wall was of suspended, plastic firebrick construction. These changes gave an improved gas flow pattern into the checkers and a slight increase in checker volume due to utilization of the volume formerly occupied by the division wall. The monolithic, rammed roof construction provided a design that virtually eliminated air leakage, gave

promise of extended service life and simplified repair when and if required.

Ups Production—Effect of these design changes on furnace operation as well as the performance of the rammed refractory was gratifying. On the first redesigned furnace, the production rate increased 11 per cent and the fuel rate decreased 10 per cent with all other factors as nearly constant as routine operation would permit. Spurred by this initial success, the design changes were duplicated on another furnace, which showed an 11 per cent production increase and a 4 per cent fuel decrease. Still another furnace was similarly changed, except it was of a basic end construction with a basic fantail nose and the rammed plastic fantail roofs. This unit only has 100 heats out on the run, but compared with a like period during the previous run shows a 9 per cent production increase with a 4 per cent fuel decrease. The first redesigned furnace now has made 480 heats since the installation of the rammed fantails and has had only a small repair to one roof, occasioned by an overload of dolomite and lime which piled up on the suspended section. These areas are now fully protected and no further trouble contemplated.

Inspections have failed to reveal

the slightest wear on the fantail or regenerator roof sections; they give every evidence of lasting definitely. There is an appreciable wearing action on the face of the "nose" occasioned by the flow of molten silica brick from the wall above. This sloughing action appears to cut away about 1 inch of the plastic on each roof run of 1 to 200 heats. This erosion only occurs on that portion of the "nose" directly under the uptake wall and when repairs do become necessary they will be of a minor nature. All three of these installations came through the recent strike shutdown without the slightest sign of deterioration aside from a couple of shrinkage cracks which have closed completely since the unit again went in production.

Performance of the furnaces and refractories has been excellent in every respect. Installation costs have been on a par with or less than an equivalent suspended brick construction and, in every case, have been completely paid for from savings during the first roof campaign. As rapidly as rebuild schedules will permit, all furnaces will be changed to conform to the new design and incorporate rammed refractories in all installations.

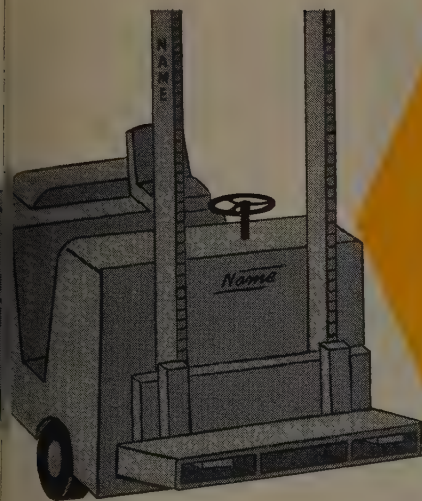
From a paper presented at annual conference, Southern Ohio Section, National Open Hearth Committee of A.I.M.E., Columbus, O., Oct. 3-4, 1952.

Atom School Registration Open

Applications for admission to the 1953-54 session of Oak Ridge School of Reactor Technology must be submitted to the school not later than March 1. Admission is open to recent graduates and to sponsored students from industry and from government agencies. The session begins in September.

Objective of the school is to provide a source of the uniquely trained technical personnel required for the AEC's reactor development program by training selected university graduates who will join various government agencies and atomic energy contractors as regular employees at the end of the training period.

The school also supplements the training of practicing engineers and scientists from industry to enable them to participate, through their sponsoring organizations, in atomic energy development work.



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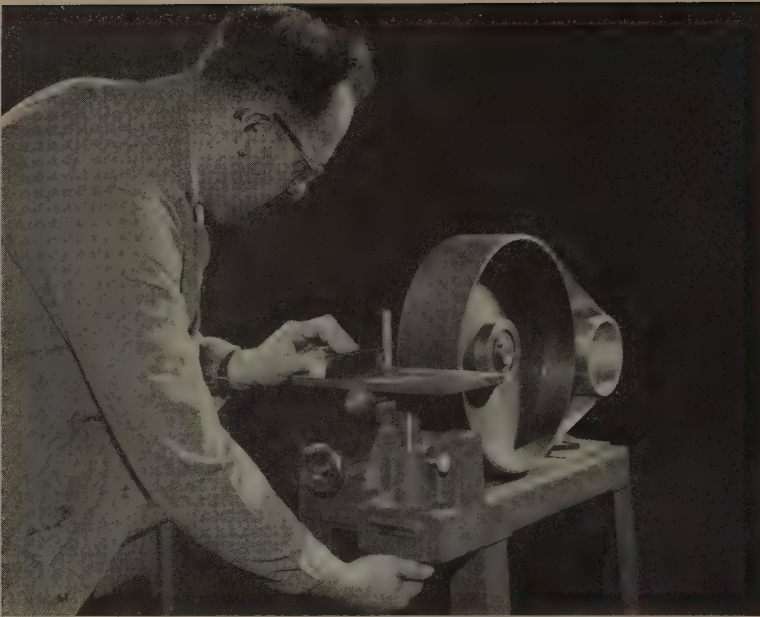
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Adjusting work table height for grinding desired relief angle on carbide tool. Table is raised until point of tool reaches desired angle marking

Belt Grinding Sharpens Carbide Tools

Method is reported to cut costs of tool sharpening, extend tool life and ease diamond wheel shortage. Could also make carbide tool use economical for many small shops

SHARPENING tungsten-carbide cutting tools by a method that does not use a diamond wheel, costs approximately two-thirds less per tool sharpened than the diamond-wheel method, and produces a longer lasting cutting edge on the tool is now a reality. A result of co-operative engineering between Behr-Manning Corp., Troy, N. Y., and Fenlind Engineering Co., Rockford, Ill., the machine uses as a grinding element a coated abrasive belt that travels over a cast iron contact wheel specially formulated for extreme hardness.

Of immediate importance to the metalworking industry, the new development removes the urgent need for diamond grinding wheels now in critically short supply. And because of its lower operating costs and the better cutting edges produced, it makes tungsten carbide tipped cutting tools available to an estimated 60,000 small shops which cannot afford the diamond wheels

previously necessary for sharpening purposes.

Cuts Time, Too—Field tests by Behr-Manning engineers show that belt costs for sharpening tungsten-carbide tool bits range between one and three cents per tool. In addition to this two-third reduction in cost of materials, the abrasive belt procedure eliminates two traditional steps without sacrificing cutting tool performance.

With the new method, the intermediate grind and the finish-honing operations are no longer necessary. After the clearance angle has been rough-ground on the tool with a silicon carbide wheel, the relief angle and final cutting surface can be micro-finished in one operation with the coated abrasive belt.

Double The Life—Working life of tungsten-carbide tipped cutting tools sharpened by a coated abrasive belt averages about double the life of those sharpened by conven-

tional methods. In one controlled test made on a production lathe turning 5665 nickel alloy, the carbide turning tools sharpened by diamond wheels averaged 12 pieces per resharpened tool.

In contrast, those sharpened by a coated abrasive belt completed an average of 34 pieces before resharpening was required. In another shop where parts made of AMS 5060 steel were being machined, diamond wheel sharpened carbide tools produced 120 pieces but the belt-ground tools turned out an average of 202-1/3 pieces per resharpened tool.

Better Finish, Longer Life—The finer finish produced by the abrasive belt on the cutting face of the carbide tip accounts for the extended tool life. A finish of 26 micro-inches rms is put on the tool by the 220-grit belt. In addition to the better finish it produces, the belt method does not produce chipping on the cutting edge of the tool that must be honed off with a diamond hone when carbide tipped tools are sharpened by conventional methods.

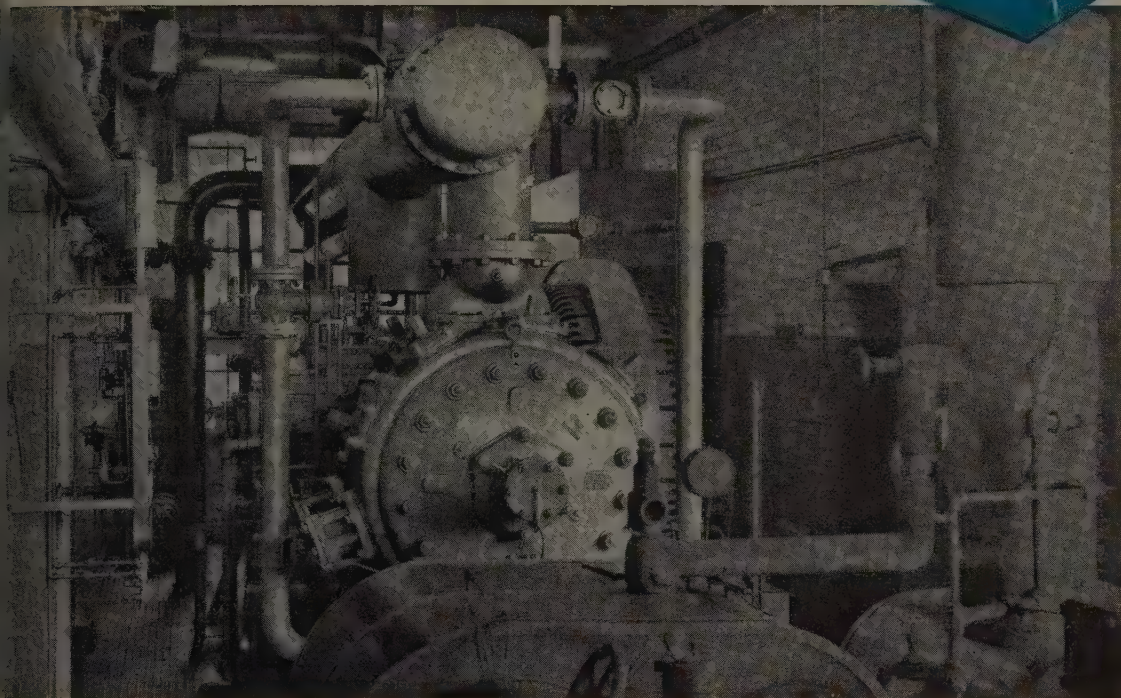
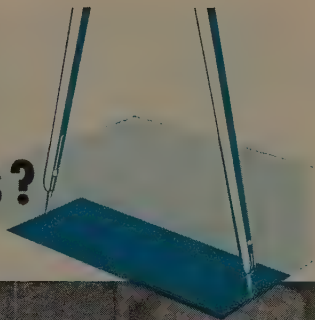
The machine that makes possible this method of sharpening carbide tipped tools is called the Fenlind Micro-Finisher. Waterproof silicon carbide paper belt (Speed-wet abrasive) is driven by a 14-inch cast iron contact wheel. The height of the work table can be adjusted in relation to the contact wheel to permit any normal relief angle on the micro-finished on the carbide cutting tool.

Unique Method—The method of setting the relief angle on the cutting tool with this machine is new to the tool grinders' trade, and reflects simple but ingenious design. The relief angle is set by adjusting the height of the table until the face of the cutting tool contacts the belt on the periphery of the contact wheel at a point on its curvature that corresponds to the relief angle desired.

A vertical gage, marked in degrees from one to 22, is accurately mounted near the table at the center of the wheel. Proper table height is established for a desired relief angle by aligning the cutting edge of the carbide tip with the correct angle marking on the vertical gage.

Takes Two Steps—The procedure for sharpening carbide tipped

Is available floor space holding back expansion of your plant air facilities?

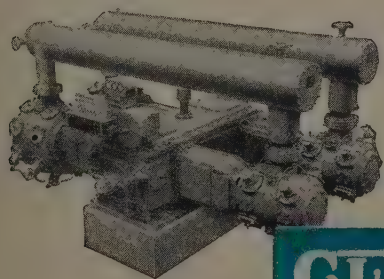


Haven't got the floor space for additional plant air facilities? Don't be too sure!

How about the nooks and crannies, or right in among your machine tools? Other plants are squeezing Clark Balanced/Opposed Compressors in many such "impossible" places. The above illustration, in an aluminum forging plant, is a typical example. Here a 600 hp, 3200 cfm Clark unit was squeezed into a 20 x 13 ft. floor area.

It's a fact that a Clark Balanced/Opposed Compressor can be moved in anywhere. One of the reasons is its compactness. Another is its absolutely vibration-free performance. You can set it in a corner, on a second floor, or alongside even the most delicate of machining operations. The savings in building, piping and installation costs are considerable.

For full information on this modern, motor-driven compressor (150-4500 hp range), request Bulletin 118, or call your nearest Clark representative.



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One-Minute Unloader

Hydraulically-elevated truck unloader speeds shipment of coke and other products between International Gas & Electrode Division and its parent Speer Carbon Co. The unloader moves 20,000 pounds of coke from trailer in 1 minute. Built by Kewanee Mfg. Co., the unloader tilts truck and trailer unit to 40-degree angle.

tools with the belt method involves two steps: First, rough grinding to clearance angle with a silicon carbide grinding wheel. Second, with the belt machine table set to produce the correct relief angle, machine finish both front and side angles of the tungsten-carbide tool and micro-finish the nose angle swinging the tool through approximately a 90-degree arc.

Light manual pressure is adequate to produce a fine finish on no edge of the cutting tool can be held against the belt for more than two or three seconds.

Wire Container Patent Eased

Release of its patented magnet wire container to all manufacturers is announced by Conda Wire & Cable Co., New York. Wire producers are free to use container themselves, for shipping of their own magnet wire products.

The new container is intended to replace the wood type. Forming in design, it results in substantial savings in freight charges and warehousing; makes for easy handling because it is lighter, when empty it stores in one-tenth the space occupied by a comparable number of wood containers.



RADIOGRAPHY

**Sets the stage for
high yield runs**



FOR EXAMPLE, take this automotive heater shut-off valve. Radiographs of pilot castings, made prior to production runs, disclosed a few recurring areas of porosity. A minor change in casting technique brought a higher yield of sound castings.

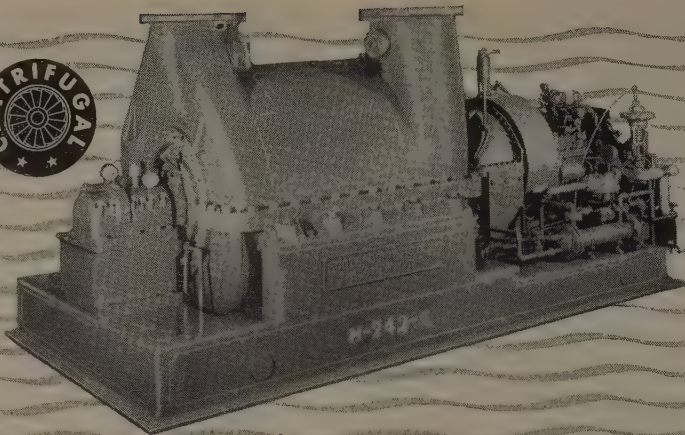
Cases like this show why more and more progressive suppliers of castings are employing radiography. It leads to sound production quickly, lets them know only high-quality work is released.

If you would like to know how radiography can help you in your operations, discuss it with your x-ray dealer. Or, if you wish, we'll send you a free copy of "Radiography as a Foundry Tool."

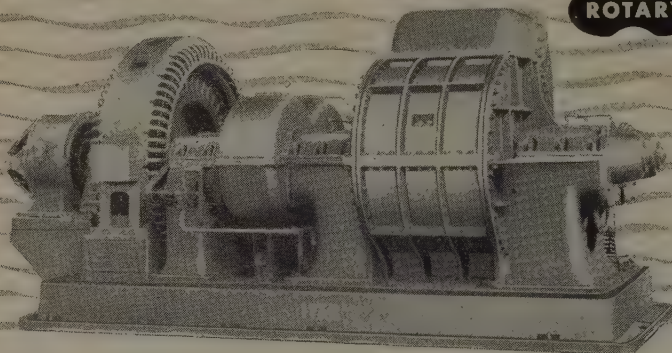
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Self-Designed Rotor

MAJOR MACHINING problem involving work on complicated blades for a ramjet engine turbine was solved by its own design reports Marquardt Aircraft Co., Van Nuys, Calif. Needed was a milling machine that could produce tolerances required for the blades on a production scale that matched normal plant equipment output.

Rotor blades must be precisely cut because they act as a turbine driving the spur-gear train mechanism for the engine's governor.



SPECIAL HEAD, CAM SERIES
... cuts turbine engine blades

alternator and generator. Another larger set of blades serves as a driving device used for the pump.

All-Angle Head—The Marquardt designed head employs a specialized series of cams and a high all-angle cutting head turning at 1800 rpm. Cutting so far has been done by using end mills and reamers.

The materials used for the rotors are Chromoloy steel and aluminum.

Rotor blades are cut from a turned blank metal piece. They are machined with sufficient precision that only a burring operation is required to produce necessary finish and tolerance before final installation. Air flow blade surfaces are maintained to about 100 rms finishes.

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★★★ Twelfth in a Series to Industry on Aluminum Uses and Developments ★★★

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Ry-Lock, the first aluminum tension screen manufacturer in the country, uses Reynolds aluminum exclusively in their quality line of tension screens for wood and metal window and door types. Clingan and Fortier, Inc., one of the Reynolds Distributors in Los Angeles and San Francisco, serves the Ry-Lock Company with aluminum for screen bars and hardware.



Ry-Lock Tension Screen installed on casement window.

Aluminum construction gives Ry-Lock tension screens advantages not provided by other materials. There is nothing to rot or warp. Aluminum does not require painting yet stands up with any color scheme. Furthermore, aluminum surfaces adjoining aluminum screens will not be streaked by rust or corrosion stains.

Tension screens manufactured and distributed under the "Ry-Lock" name in the eleven western states are a product of the Ry-Lock Company. The New York Wire Cloth Company has been licensed to manufacture and distribute them in the other thirty-seven states under the name "Durall."

For a free copy of Reynolds 1953 Product Design catalog, and a complete index of technical literature and movies, write to Reynolds Metals Company, 2576 South Third Street, Louisville 1, Kentucky.

Behlen Manufacturing Company Opens Broad New Fields In Modern Building Design and Construction



Fourteen tractors, weighing 32 tons, suspended from roof ridge of frameless Behlen aluminum building. Insets show alternate methods of eave construction.

Ample proof of what you can accomplish with aluminum and good design, is found in the popular frameless aluminum buildings produced by the Behlen Manufacturing Company of Columbus, Nebraska.

Rustproof, Acid Resistant Aluminum Plays Important Role in Manure Spreader

In this efficient combination of power box and manure spreader, the rustproof and corrosion resistant advantages of aluminum are used to withstand manure acids.

The Farmhand Power-Box sits on truck, wagon or trailer with equal ease. When connected to a source of power, the bed of the



box moves the load back to a Farmhand Spreader Attachment for the final flip that distributes manure evenly over the field.

Because of the corrosive action of manure, both pieces of equipment are made primarily of aluminum and treated wood. They are manufactured by The Farmhand Company, a division of Superior Separator Company, Hopkins, Minnesota.

Designed primarily for industrial, farm and military use, these straight side, frameless Behlen buildings are constructed without upright support members for walls or in the interior, and without truss support for the gable-type roof.

Deeply corrugated aluminum panels for walls and roofs are bolted together at the eaves and roof ridge to form a continuous arch. The arch sections are in turn bolted to each other to form a complete, weatherproof, load-bearing shell.

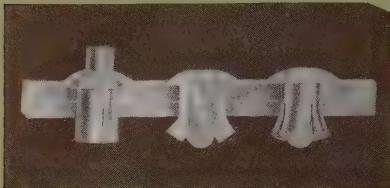
Panels for the Behlen buildings are made from .064-inch to .072-inch aluminum alloy sheets, corrugated to a depth of 7½ inches. This corrugating adds so much rigidity that each arch section has the same strength as an I beam of equivalent weight.

All of the important advantages of strong, light weight, rust-proof, heat reflecting, maintenance-free aluminum are utilized to the maximum by progressive Behlen engineers. To get similar advantages in your products, have a Reynolds Aluminum Specialist assist you on new or redesign problems.

Reynolds Aluminum Specialists will be glad to work with you, just as they have worked with Behlen and countless other companies. This assistance is yours without obligation through the Reynolds office or Reynolds Distributor listed under "Aluminum" in your classified telephone directory. Or write direct to Reynolds Metals Company, 2576 South Third Street, Louisville 1, Kentucky.

Aluminum Drive Rivets Save Production Time and Money

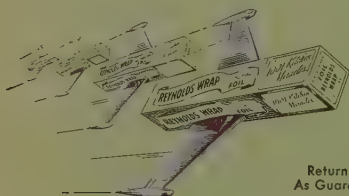
Aluminum rivets, nuts, bolts, screw, washer, cotter-pins and other mechanical fasteners are produced by a number of leading manufacturers who rely on Reynolds for top quality material. A typical example, is the aluminum Southco Drive Rivet, one of several aluminum fastening devices made by the South Chester Corporation of Lester, Pennsylvania.



The photograph illustrates how a hammer-driven pin expands the prongs of this patented rivet, drawing panels together in a tight, secure joint. Thus blind joints made with aluminum Southco Drive Rivets are quickly and easily completed. There's no bucking, trimming or grinding. Once driven, the inserted grooved pin cannot work loose even under severe vibration.

Use of rustproof and corrosion-resistant aluminum fasteners with aluminum assemblies prevents any possibility of galvanic reaction between dissimilar metals when they may be subjected to moisture or water.

For your free copy of the valuable handbook "Fastening Methods for Aluminum," plus a complete index of Reynolds technical literature, write on your business letterhead (otherwise the book is \$1.00) to Reynolds Metals Company, 2576 South Third Street, Louisville 1, Kentucky.



Return Flight
As Guaranteed

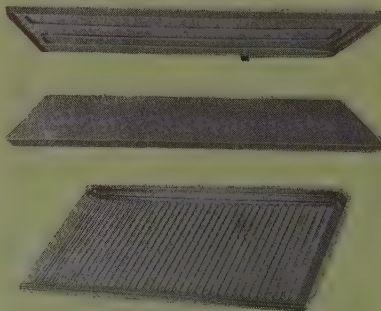
Reynolds Aluminum Foil Now Used As Facing for Glass Fiber Insulation

Gustin-Bacon Manufacturing Company, makers of Ultralite and Ultrafine glass fiber insulations, now offers this material faced with Reynolds Aluminum foil... another example of the fast growing list of applications for aluminum foil in many industries.

Growing Industries Rely on Reynolds Aluminum Fabricating Service

More and more companies in diversified industries are taking advantage of Reynolds complete fabricating service for aluminum parts. As an example, illustrated below are two types of aluminum shelving produced by Reynolds Parts Division for the refrigeration industry.

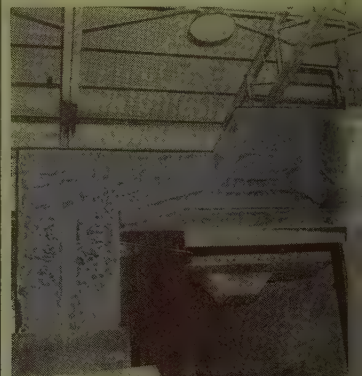
Vertical freezer shelves are made from Reynolds high strength aluminum alloy sheet to which aluminum tubing is cleanly and securely brazed. These shelves provide a high degree of heat transfer efficiency in addition to being rigid and durable. They are available with a plain anodized or Alodized finish. One-



piece, Reynolds Aluminum refrigerator shelving, with a corrosion-proof and chip-proof plain or color anodized finish, is also rigid and attractive.

Whether you want final assemblies, completed parts, blanks or roll-formed shapes, you'll find the extensive facilities and technical assistance of Reynolds Parts Division real value. Contact the nearby Reynolds office listed under "Aluminum" in your classified telephone directory or write Reynolds Metals Company, Parts Division, 2065 South Ninth Street, Louisville 1, Kentucky.

A one-half inch thick pad of the glass fiber insulation with .0007-inch aluminum foil is commonly used as a furnace jacket liner. The reflective heat reflecting surface of the foil, plus the pad of insulation, keeps the jackets cool and reduces popping noises due to the contraction and expansion of the casing. Left: manufacturers of furnaces are using more and more aluminum foil faced Ultralite and Ultrafine for this purpose.



Air conditioning ductwork insulated with foil faced Ultralite

Ultralite faced with .0025-inch aluminum foil also provides a complete vapor barrier in the insulating of air conditioning ducts. The aluminum foil barrier prevents condensation from forming on the cold duct surface and the bulk insulation. And since aluminum Ultralite and Ultrafine are all fire-resistant, this insulation passes city building codes. The .0025-inch foil faced Ultralite is also used extensively in the insulation of metal buildings.

The Gustin-Bacon Manufacturing Company has its general offices in Kansas City, Missouri, and maintains branch offices and distribution in a number of large cities.

For information on the application of Reynolds Aluminum foil in your products, write Reynolds Metals Company, 2576 South Third Street, Louisville 1, Kentucky.

It's Sno' Fun Without A Light, Aluminum Shovel!

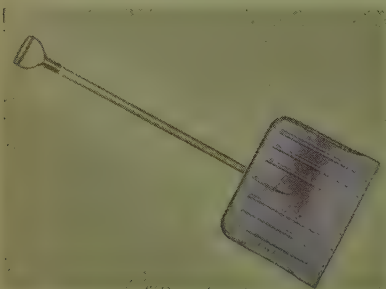
Here's tomorrow's weather forecast: SNOW - followed by little boys on sleds... and big fellows with snow shovels.

You can cut down on those backaches, however, if you have a featherweight aluminum snow shovel like the one illustrated here, that's made by the Hamlin Metals Products Company of Akron, Ohio.

Hamlin, like other manufacturers of quality products, relies on Reynolds Aluminum to add dependability plus sales appeal to their

snow shovels. They make the light weight, rust-free blades with a Reynolds aluminum alloy.

Remember—whether you are designing or manufacturing anything from snow shovels to steam shovels, Reynolds Aluminum Specialists are ready to help you get the most out of aluminum. Call your Reynolds office listed under "Aluminum" in your classified telephone directory or write Reynolds Metals Company, 2576 S. Third St., Louisville 1, Kentucky.





Downtime: 1/2 of 1 per cent
 mesh-belt copper brazing furnace
 Acklin Stamping Co., Toledo, O.,
 been shut down for maintenance
 1/2 of 1 per cent of total running
 , reports the company. The G-E
 ace was installed in 1950, and
 been operated 16 hours a day, 5
 s a week. Total downtime: 40 hrs.

Metal Powder Bearing Standards Set

Need for standardization in bearings
 made from sintered metal powders
 and impregnated with oil to
 make them self-lubricating has
 been met by Metal Powder Association,
 New York, which has released
 the first of two new standards.

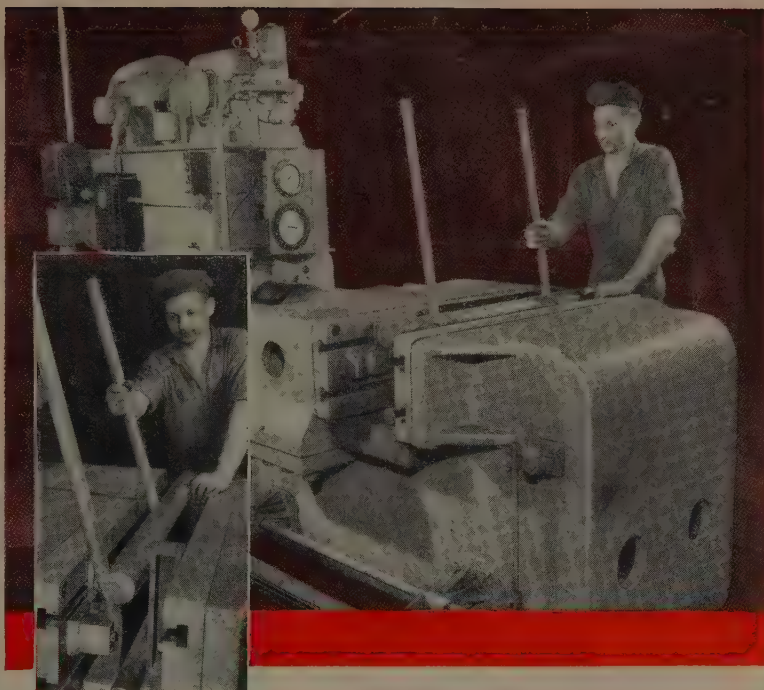
The new standard is designated
 52T, "Specifications for Metal
 Powder Sintered Bearings (Oil Im-
 pregnated)," and is identical in
 substance to ASTM standard B202.
 Referring to M.P.A. standards,
 it is now possible for all users of
 self-lubricating bearings to find
 complete industry-wide specifica-
 tions in one place.

Copies of the standards may be
 obtained at 25 cents per copy from
 the association headquarters in New
 York.

Flame Cutting Data Published

Principles of flame cutting, pro-
 cedures and description of the vari-
 ous cutting tools are covered in a
 16-page booklet published by Nat-
 ional Welding Equipment Co., San
 Francisco. Designed to help both
 beginner and experienced operator,
 copies are available through dis-
 tributors or the company head-
 quarters.

January 19, 1953



**Mercury Mfg. Co. does a better job
 twice as fast with a**

FARQUHAR Hydraulic Press

Mercury Manufacturing Co., Chicago, Ill.,
 producers of fork trucks, tractors and
 trailers, uses a 200-Ton Farquhar Horizontal
 Bulldozer press to make forgings and
 stampings and to form plates. In operation
 8 hours a day, the press does most jobs
 twice as fast as the mechanical bulldozer
 used formerly, and better speed control pro-
 duces better work.

In addition, many pieces of work that
 used to be farmed out are now done at
 Mercury—providing better production and
 quality control, and effecting additional
 savings of time.

In the operation shown above, high
 carbon brazed steel is bent quickly and
 accurately. In other operations, the press
 forms heads on bolts, legs for castor forms,
 and bends structural T frames.

Mercury reports very small main-
 tenance costs, and sums up the company's
 satisfaction with, "It's the best!"

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 greater accuracy because of the extra
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 operation with finger-tip controls . . .
 longer life due to positive control of speed
 and pressure on the die . . . long, depend-
 able service with minimum maintenance
 cost!

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 solve whatever production problem you
 may have. Give them a call.

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 ties for all types of industry. Write to:
 A. B. FARQUHAR Co., *Hydraulic Press*
 Dept., 1522 Duke St., York, Pa.

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 Extruding • Jogging • Forging • and other Metalworking Operations

—A. B. FARQUHAR COMPANY Division of THE OLIVER CORPORATION—

"We solve depth-of-hardness problems on low hardenability steels with **GULF SUPER-QUENCH**"

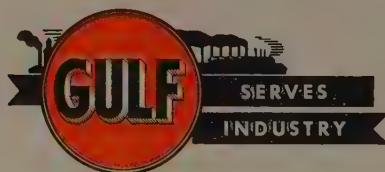
says James Mericka, President
Steel Improvement Co., Detroit, Mich.

"One of our current jobs is quenching and drawing $1\frac{1}{4}$ x 22 in. cold-rolled pins for tank tractor treads," says Mr. Mericka, "and we have to through-harden these pins to 35-40 Rockwell, C. Ordinarily this is quite a problem with some of the substitute steels, such as AISI 8150 and 8160."

"But by using Gulf Super-Quench, we've been able to meet this hardness specification on every substitute steel delivered to us. And we get a minimum of distortion and cracking with this fast-quenching oil, which results in fewer rejects and an improved profit picture."

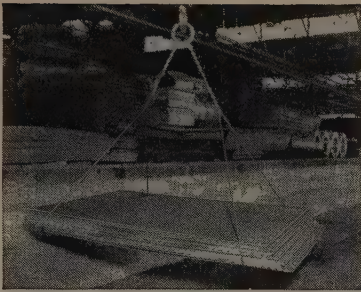
This is typical of the results obtained in scores of metal-working plants with Gulf Super-Quench. For additional information on this quality fast-quenching oil, call in a Gulf Sales Engineer. Write, wire, or phone your nearest Gulf office.

**GULF OIL CORPORATION
GULF REFINING COMPANY
PITTSBURGH 30, PENNSYLVANIA**



CALENDAR OF MEETINGS

ry 19-22, American Society of Mechanical Engineers and Society for the Advancement of Management: Plant maintenance conference & exposition, Public Auditorium, Cleveland. Exposition managers: Clapp & Oak Inc., 250 W. 57th St., New York 19.
 ry 19-23, American Institute of Electrical Engineers: Winter general meeting, Hotel Statler, New York. Institute address: 30 W. 39th St., New York 18. Secretary: H. Henline.
 ry 20, Cutting Tool Manufacturers Association: Annual meeting, Hotel Statler, New York. Association address: 416 Penobscott St., Detroit. Secretary: Emil Gairing.
 ry 20-22, American Medical Association: Congress on Industrial Health, Drake hotel, Chicago. Association address: 535 N. Dearborn, Chicago 10. Secretary: Dr. C. M. Peterson.
 ry 20-22, Caster & Floor Truck Manufacturers Association: Winter meeting, Hotel Roosevelt, New York. Association address: 10 E. Monroe, Chicago. Secretary: H. P. Hansen.
 ry 21-22, Steel Shipping Container Institute: Winter meeting, Pierre & Hampshire House, New York. Institute address: 600 5th Ave., New York 20. Secretary: L. B. Lerer.
 ry 22, American Coke & Coal Chemicals Institute: Regional meeting, Edgewater Beach hotel, Chicago. Institute address: 711 N. St. NW, Washington 5. Executive Secretary: Samuel Weiss.
 ry 22-23, Steel Plate Fabricators Association: Annual meeting, Palmer House, Chicago. Association address: 37 W. Van Buren, Chicago. Secretary: Dwight Evans.
 ry 23, Malleable Founders' Society: General meeting, Hotel Cleveland, Cleveland. Society address: Union Commerce Bldg., Cleveland 14. Managing director: Lowell D. Gannon.
 ry 26-28, Truck-Trailer Manufacturers Association Inc.: Annual winter meeting, Edgewater Gulf hotel, Edgewater Park, Mo. Association address: 1024 National Press Bldg., Washington. Managing director: John B. Hulise.
 ry 26-30, American Society of Heating Ventilating Engineers: International heating & ventilating exposition, Grand Central Palace, New York. Society address: 51 Madison Ave., New York 10. Secretary: V. Hutchinson.
 ry 1-5, Associated Equipment Distributors: Annual meeting, Hotel Conrad Hilton, Chicago. Association address: 30 E. Cedar, Chicago. Secretary: P. D. Hermann.
 ry 2, Cleveland Engineering Society: Annual machine design conference, society offices, 2136 E. 19th St., Cleveland 15. Information: Don Cornish.
 ry 4-6, Computer Conference Committee, Institute of Radio Engineers and American Institute of Electrical Engineers: Western computer conference, Hotel Statler, Los Angeles. Information: G. H. West, Publications Dept., Consolidated Engineering Corp., Pasadena 8, Calif.
 ry 9-11, American Road Builders' Association: Annual meeting, Hotel Statler, Boston. Association address: 1319 F St. N.W., Washington 4. Secretary: Gen. Eugene Bybold.
 ry 15-19, Automotive Electric Association: Annual meeting, Edgewater Beach hotel, Chicago. Association address: 802 Michigan Bldg., Detroit 26. Secretary: W. Potter.
 ry 16-19, American Institute of Mining and Metallurgical Engineers: Annual meeting, Hotel Statler, Los Angeles. Institute address: 29 W. 39th St., New York 18. Secretary: E. H. Robie.
 ry 16-19, Industrial Ventilation Conference: Michigan State College, E. Lansing, Mich., Co-sponsor: Division of Industrial Health, Michigan Dept. of Health. Information: K. E. Robinson, Division of Industrial Health, Lansing 4.



The Answers To Your Questions:

- 1 How to determine the sling types you need
- 2 How to get longer sling life
- 3 How to make hitching and unhitching easier
- 4 Proved ways to cut sling costs
- 5 How to splice wire rope — directions for socketing

IN THIS NEW SLING HANDBOOK

Only handbook of its kind in the sling field—packed with useful, money-saving facts that can help you cut sling costs up to 40%. The Tuffy Sling Handbook and Rigger's Manual shows you how Tuffy's exclusive, patented braided wire fabric construction assures greater flexibility and longer service life. See for yourself how much you can save with Tuffy Slings on the job!



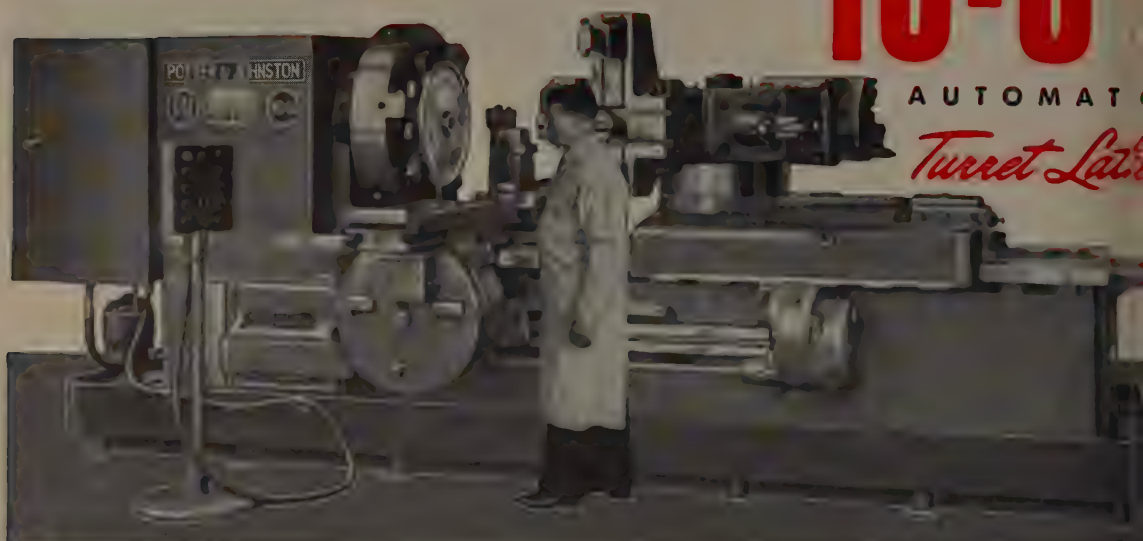
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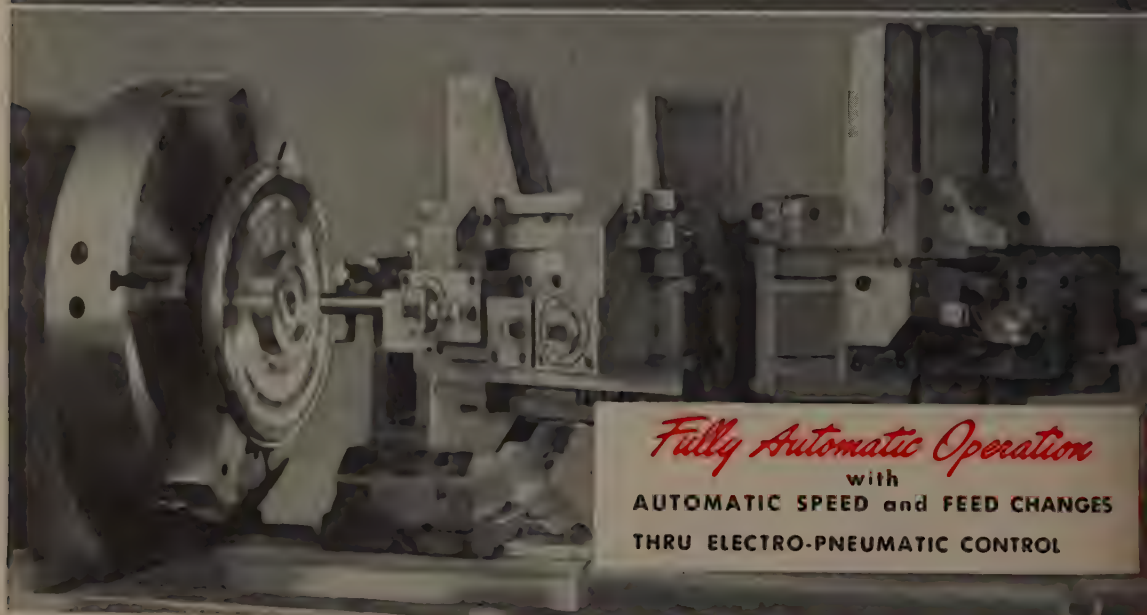
- ☐ Send FREE Tuffy Sling Handbook and Rigger's Manual
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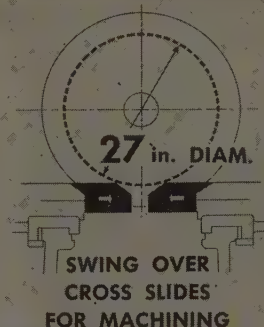
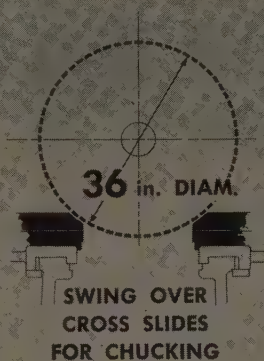
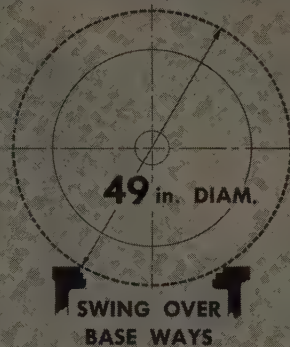
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Big, powerful, new Potter & Johnston 10-U Turret Lathe now brings advantages of fully automatic operation to your really big, hard-to-handle jobs, like this large-diameter disk for an aircraft jet engine—now here mounted in a 36 inch chuck. The P&J-designed tooling takes full advantage of simultaneous multiple cuts to produce the finished work piece.

P&J 10-U is equipped with a 75 horsepower motor, multi V-belt drive and air operated chucks. Controls are centralized in a single, convenient station. All mechanisms including the chucks are readily accessible for adjustment.

If you're doing big jobs, you'll want more information on the Potter & Johnston 10-U Automatic Turret Lathe. Send today for your copy of Bulletin 146. Write on your Company letterhead to the Pratt & Whitney Branch Office nearest you — or direct to Pawtucket, R. I.

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possible so that U. S. Steel Supply service will always be the best the industry has to offer.

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UNITED STATES STEEL

NEW

PRODUCTS and equipment

Reply cards on page 115 will bring you more information on any new products and equipment in this issue

Two-Spindle Drilling Machine

... speeds: 65 to 1360 rpm

heavier base and more sturdy column are two improvements incorporated in this two-spindle, 20-inch swing, model MC-20 drilling machine. Result is rigidity and

back of the cross slide on a bridge-type carriage, freeing the square turret for other operations on the same piece.

Tracing attachment is also applicable for turning tapers. A hard-

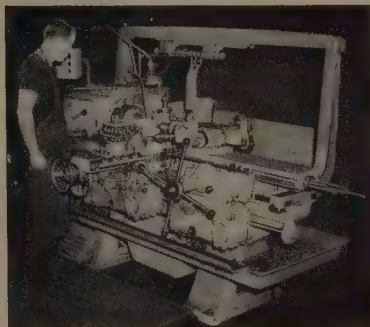
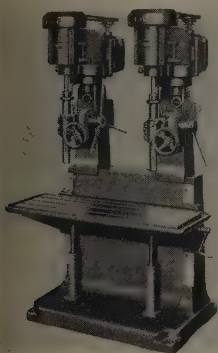
to reduce or eliminate fumes. Effect on heavily rusted and scaled steel is seen in bright surface on half of cut above. Enthone Inc., Dept. ST, New Haven, Conn.

USE REPLY CARD—CIRCLE No. 3

High-Production Turner

... capacity to 1 3/4-inch bars

Smaller model Turnomat turning attachment for lathes and drill presses is offered as a complete machine. Designed to release larger lathes for other production work,

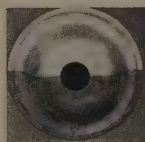


ened straight edge, set at desired angle, serves as a template or former. In addition to actual tracing and taper turning, attachment makes available all facilities of a turret lathe. Jones & Lamson Machine Co., Dept. ST, Springfield, Vt.

USE REPLY CARD—CIRCLE No. 2

Acid Compound Descaler

... overcomes acid hazards



Type 2A descaler is a dry, free-flowing acid compound that removes rust and scale from steels and alloy steels. Product is dissolved in water in concentration range from 4 ounces to 3 pounds per gallon. It overcomes hazards attendant with handling strong sulphuric or hydrochloric acid, producing a controlled acid concentration to prevent overpickling.

Product contains surfactants to dislodge oil films and create a foam

the model's capacity reaches 1 3/4-inch bar stock. Its four interchangeable heads cover a range from 1/32-inch. Machine is built to turn to small diameters in one plunge cut. Turnomat Co. Inc., Dept. ST 28, Brockport, N. Y.

USE REPLY CARD—CIRCLE No. 4

Surfacing Material

... resists corrosion, abrasion

Ceilerete is a combination of synthetic liquid resin, inert fillers and pigments and cures into a hard dense stone-like corrosion-proof surface that will withstand truck-

mina required for a capacity of 1-inch drilling in mild steel.

Dial indicator for easy selection of geared power feeds steps up operator efficiency. A spring-loaded turret is included for changing the turret spindle speeds from 65 to 1360 rpm. Sibley Machine & Foundry Corp., Dept. ST, South Bend, Ind.

USE REPLY CARD—CIRCLE No. 1

Hydraulic Tracing Attachment

... expands lathe job capacity

This turret lathe hydraulic tracing attachment is built for use on Jones & Lamson ram or 7A saddle universal bar or chucking machine for general tracing, multistep shaft and contour work. Attachment is operated by a differential type cylinder. Tool-carrying slide is mounted on a 45-degree angle with the spindle axis. Cylinder stylus and tracing tool are mounted on the



IN HOCKEY, "goalies" are trained to give protection from any angle.

In like manner, Worcester Stamped Metal engineers seek to give complete customer protection. They eliminate unnecessary operations and expense in the fabrication of metal stampings and — in many cases, their "know how" improves design specifications and reduces cost factors.

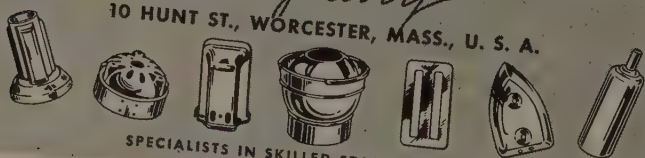
Further protection of the customer's interests is assured by recent expanded manufacturing facilities. A new, modern building makes available the right press for the job and quick, efficient service.

If you have a problem that concerns the use of light, heavy or deep drawn stampings, we suggest you make inquiry early in the planning stage.



WORCESTER STAMPED METAL
Company

10 HUNT ST., WORCESTER, MASS., U. S. A.



SPECIALISTS IN SKILLED STAMPING SERVICE

NEW PRODUCTS and equipment

ing, foot traffic and abrasion. It has a high rated strength for load carrying.

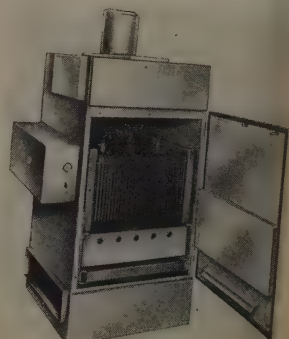
It is trowelled on concrete surfaces of tanks, walls, floors. The material resists solvents, acids, alkalis and is nonsparking and non-slip. Ceilcote Co., Dept. ST-509, Ridge Road, Cleveland 9, O.

USE REPLY CARD—CIRCLE No. 5

Oil Mist Control

... recovers machining coolant

Self-contained Precipitron mist control unit recovers coolant oil from mist and smoke generated by high speed machining. Control is available in two models: PO-6 has air handling capacity



600 cfm; PO-12, 1200 cfm. Control unit is designed to be completely self contained.

In addition to coolant oil salvage, recovery includes advantages in reduced industrial hazards, savings in heating costs, improved employee relations and lower maintenance costs. The power pack operates from a single-phase, 115 v line, consuming less than 60 w when operating. Sturtevant Division, Westinghouse Electric Corp., Dept. ST-509, 200 Readville St., Hyde Park, Boston 36, Mass.

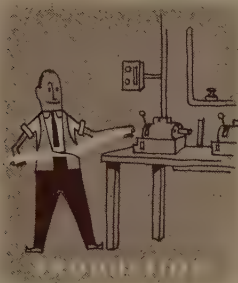
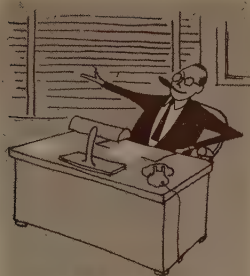
USE REPLY CARD—CIRCLE No. 6

Liquid Resin

... for sand core bonding

Durez 16039 is a phenolic type liquid resin for sand core bonding. It is claimed that cores made with this resin are suitable for use in making castings from aluminum, bronze, gray iron, malleable iron and steel. It is soluble in water but upon curing either in oven or

You reach all 4



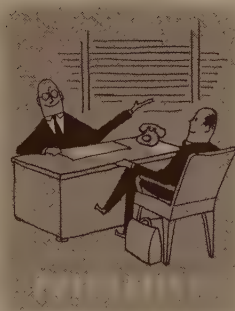
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of the men responsible

for

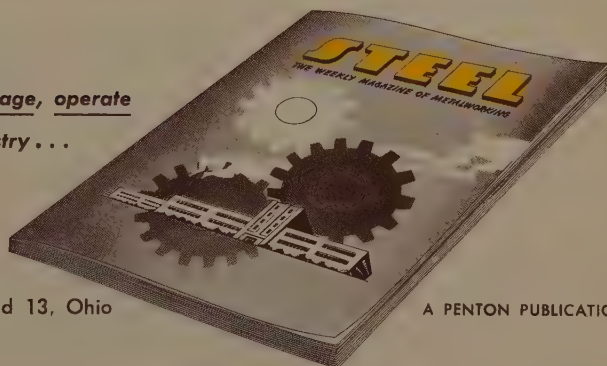


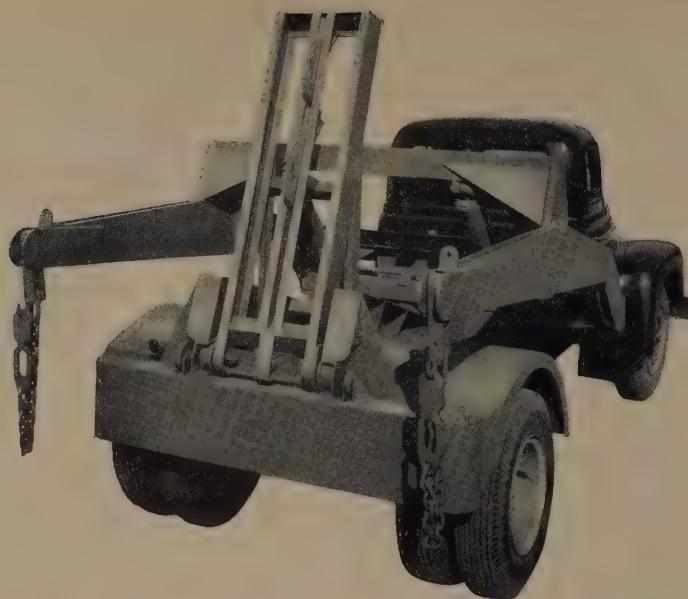
metalworking

operations

...

*The magazine of the men who manage, operate
and buy for the metalworking industry...*





WHY USE 3 TO 5 TRUCKS... WHEN ONLY ONE WILL DO?

In many plants a Dempster-Dumpster, like the one above, operated by only one man, the driver, has replaced 3 to 5 conventional trucks and crews. The reason for this is that one truck-mounted Dempster-Dumpster serves scores of Dempster-Dumpster Detachable Containers up to four times the capacity of the average dump truck body. These containers are built in a wide variety of designs best suited to the type of materials handled—be they bulky, light or heavy . . . solids or liquids . . . trash or rubbish. Containers are conveniently located at accumulation points inside and outside buildings. To illustrate the flexibility of the Dempster-Dumpster System in handling all types of materials in your plant, we show, at right, a few of the

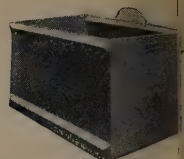
dozens of Dempster-Dumpster Containers built to meet every bulk materials handling need. And remember, one truck-mounted Dempster-Dumpster handles all containers, regardless of capacity or design.

The Dempster-Dumpster System eliminates standing idle time of crews and trucks . . . eliminates re-handling of materials . . . increases efficiency, sanitation and good housekeeping . . . cuts cost of truck equipment and operation tremendously. Without question, it's the most efficient and lowest cost method of bulk materials handling by truck ever devised! The chances are this system will save you thousands of dollars annually. This equipment manufactured and sold exclusively by Dempster Brothers, Inc.



WHEN A CONTAINER IS FULL, the Dempster-Dumpster picks it up, hauls to destination and dumps the materials or sets load down intact. These three simple operations, shown above, are hydraulically controlled by driver in truck cab.

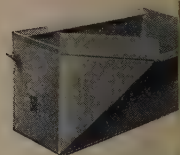
DEMPSTER BROTHERS, 613 Dempster Bldg., Knoxville 17, Tenn



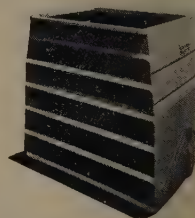
Drop Bottom Container built up to 10 cu. yd. capacity to handle heavy materials.



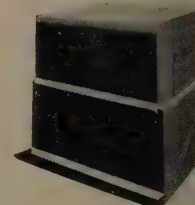
Tank Type Container meeting A.S.M.E. specifications. Capacities up to 1,200 gallons.



Tilt Type with Converged sides for handling fine aggregate, wet or fluid materials.



Drop Bottom Pressed Steel Type for lighter service.



Universal Type built up to 12 cu. yd. capacity with swivel casters for handling waste blast sand.



Five cu. yd. container with swivel casters for handling waste blast sand.

PRODUCTS and equipment

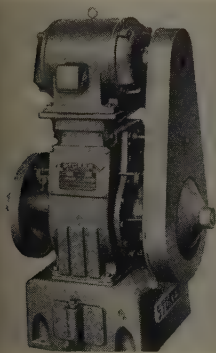
electric dryers, resulting cores
good water resistance. Durez
ics & Chemicals Inc., Dept.
N. Tonawanda, N. Y.
REPLY CARD—CIRCLE No. 7

Microvacuum Pump

for metal evaporation

Applications possible with the
proved model G Microvac pump
include high vacuum evaporation
metals and metallic salts. New
features include a shaft seal re-
signed to minimize maintenance
requirements.

There are no stuffing boxes, no



There are no adjustments. Lubrica-
tion is automatic, freedom from
maintenance assured.

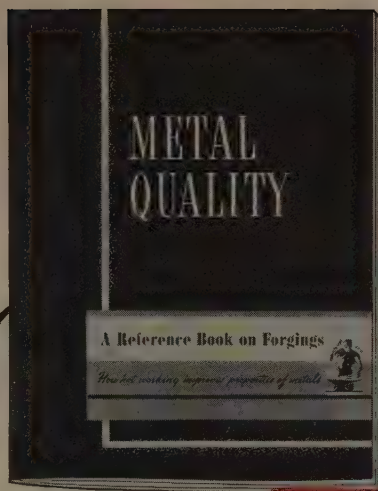
Valve stops prevent copper-
bismuth springs from reaching
into coil compression at any
time. These stops also permit use
of the pumps in a broad applica-
tion range including rapid cycling
evacuation of large-volume sys-
tems. Side entrance intake acts
as a baffle against entering sol-
d particles. Added protection is afforded
by a screen filter. F. J. Stokes
Machine Co., Dept. ST, 5500 Tabor
Road, Philadelphia 20, Pa.

REPLY CARD—CIRCLE No. 8

Floor-Type Universal Tester

built for large specimens

This universal testing machine has a
45-foot finished machine bed pad.
The floor-type unit is designed es-
pecially for large specimens, such
as bridging members, aircraft
components and concrete columns. Cross-
head is driven by a Thymotrol mo-
tor mounted directly on the cross-
head. Raising and lowering cross-
head on fixed screws permits a



Engineering, production
and economic advantages
obtainable with forgings
are presented in this
Reference Book on forg-
ings. Write for a copy.

FORGINGS ARE UNUSUALLY EFFECTIVE FOR SOLVING PROBLEM PART PROBLEMS

A problem part problem, however
complex, often ceases to be a problem
once all the aspects of the part are
checked with the unrivaled
economic and mechanical advan-
tages of closed die forgings and
the closed die forging process
for producing parts. Whatever the
nature of problems that make
a problem part, consult a
forging engineer to determine
the extent to which forgings
can help you solve them.

DROP FORGING ASSOCIATION

605 HANNA BLDG. • CLEVELAND 15, OHIO

Please send 60-page booklet entitled "Metal
Quality—How Hot Working Improves
Properties of Metal", 1949 Edition.

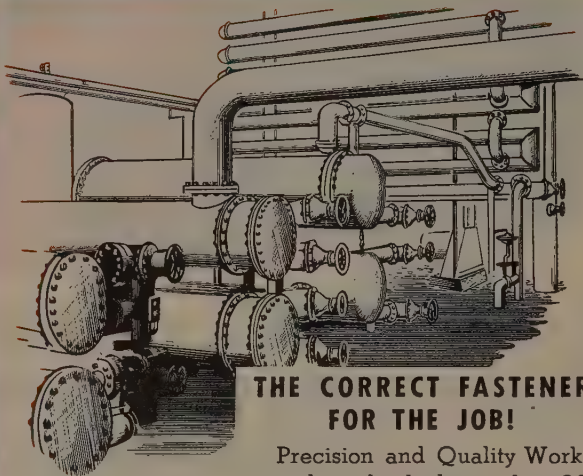
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Representatives in Principal Cities.

NEW PRODUCTS and equipment

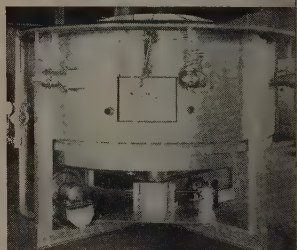
more direct and rigid drive with less torsion.

The 200,000-pound tester's speed range is 20 to 1, providing overall loading speed of 0.025 to 0.5 inches per minute. Traverse speed: 1 inch per minute. Special flange plate construction in each plan allows eccentric loads to be used. Young Testing Machine Co., Ltd., ST, Skelton Bldg., Bryn Mawr, Pa. USE REPLY CARD—CIRCLE No. 9

Rotary Hearth Furnace

. . . has long flame burners

Furnace has 7-foot, 6-inch inside diameter hearth, with a 30-inch column. Chamber height 15 inches. Center column forms doughnut-shaped heating chamber.



Burners fire tangentially of the hearth lining and against the direction of table rotation.

Furnace is controlled by a Leeds and Northrup strip chart instrument. Unit can be used for temperatures of 1200 to 2300° F. Williams Furnace Co., Dept. ST 1, 100 Symmes St., Cincinnati, O.

USE REPLY CARD—CIRCLE No. 10

Liquid Belt Lube

. . . sprayed on as fine mist

Packaged in pressure cans, the liquid lubricant is released as a fine mist by pressing the nozzle with the finger. Product revitalizes leather, rubber or fabric transmission belts, restoring flexibility, prolonging life and stopping slippage. Alexander Brothers Belting Co., Dept. ST, Philadelphia, Pa.

USE REPLY CARD—CIRCLE No. 11

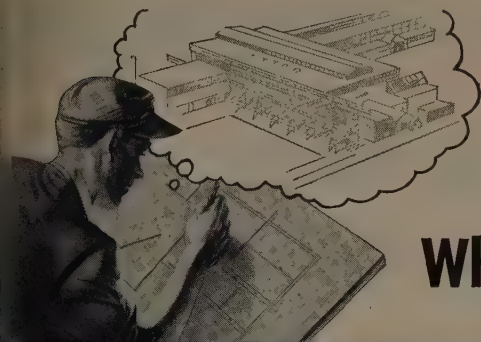
Hydraulic Filter Units

. . . pumps oil from machine

Portable hydraulic filter units are used for pumping hydraulic

Don't Forget Materials Handling

When Designing the Building



BUILDING SIZE

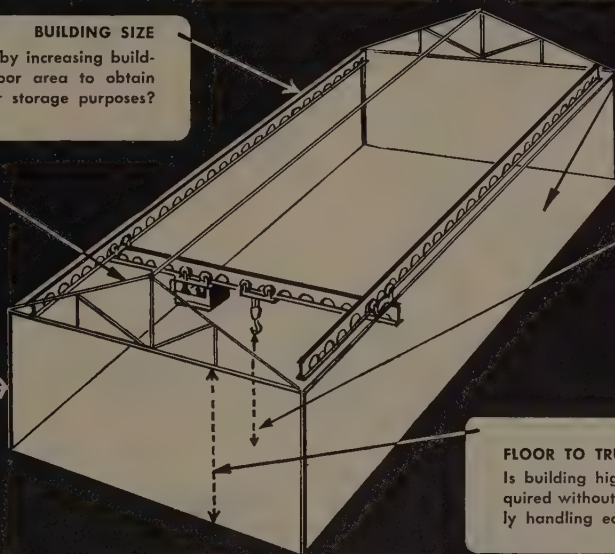
How much will be saved by increasing building height instead of floor area to obtain necessary cubic space for storage purposes? Usually it costs less.

ROOF TRUSS CAPACITY

Will roof trusses carry Tramrail, or other conveyors, in addition to other usual loads?

COLUMN SIZE

Are columns heavy enough to support overhead handling equipment and moving loads? Will they take possible future larger size loads?



FLOOR

Is floor designed to withstand wear and tear of heavy floor truck traffic without undue costly maintenance?

MAXIMUM LIFT

What will be maximum lift required? What load weight? What is weight and clearance dimensions of equipment to handle this load?

FLOOR TO TRUSS CLEARANCE

Is building high enough to secure lift required without going to special, more costly handling equipment?

The foremost demand of a new factory building, whether for production or storage, is that its design and construction aid overall operating efficiency to the utmost. Thus, the building becomes more than just an enclosure, but is actually a vital part of the manufacturing process.

It is, therefore, imperative that the various steps entering into the making of an item be thoroughly considered when the building is designed. One of the most important of these concerns materials handling because this item often amounts from 25% to 50% of the total production cost, and, also, because it is plant-wise in nature.

Regardless of what handling methods are deemed best, overhead cranes or Tramrail, roller or chain conveyors, floor trucks, etc., the building design, size and construction usually has a tremendous bearing on the ultimate handling efficiency secured. Building clearances, floor construction, column locations, aisleway allowances and other factors must be considered for the different handling methods for most satisfactory results.

For initial economy in installation, for most satisfactory operation and highest efficiency, plan for materials handling when you design the building. **Do not make materials handling an afterthought.**

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CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
7873 East 284th Wickliffe, Ohio.

CLEVELAND  TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

Come what may... your plant is prepared for the future...



*when it's equipped with versatile **LAKE ERIE** hydraulic presses*

Norris-Thermador Corp. provides another excellent example

YESTERDAY...

it was bathtubs

TODAY...

it's shell casings

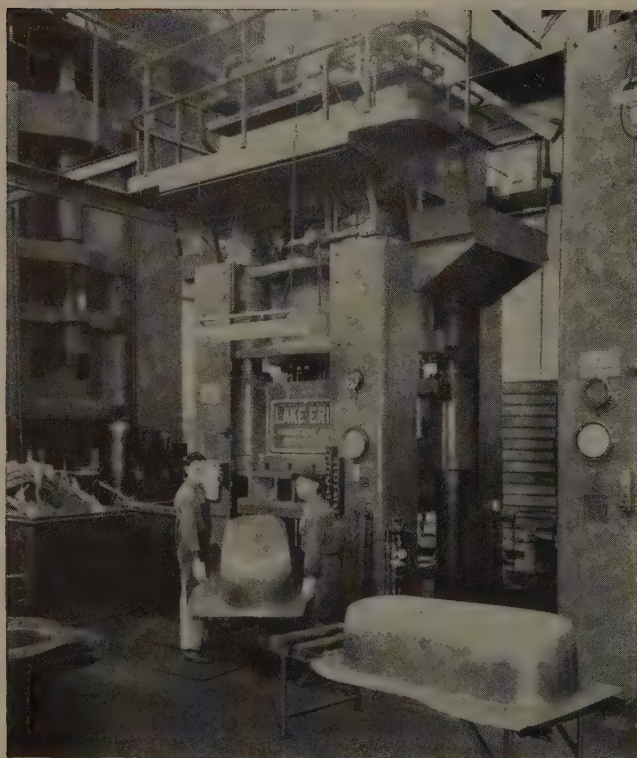
TOMORROW...

it may be another metal product

BUT...

these hydraulic presses will be ready for it.

Plant versatility is a mighty important asset... particularly today when products and markets are so prone to change on such short notice. When this versatility is coupled with high production efficiency, as it is with the fast Lake Erie hydraulic presses available today, your plant is equipped to return maximum yield on your investment. No matter what change-over you encounter—military to civilian, or vice versa... a model switch... the introduction of a new product... versatile and efficient Lake Erie Hydraulic Presses will enable you to make the change with a minimum of money, time and retooling. Why not investigate these advantages of Lake Erie Hydraulic Presses? Write or call us. No obligation.



- One of 26 Lake Erie Hydraulic Presses in the Norris-Thermador Corp. plant demonstrates its remarkable versatility. At left—drawing bathtubs, right—heading 105 mm. shell casings.

READY FOR ANY PRODUCT

In a changing world, this battery of presses at the Norris-Thermador Corp. plant in Los Angeles demonstrates its ability to cope with any production requirement. In addition to bathtubs and shell casings, these presses are also being used to produce compressed gas cylinders for oxygen, propane, CO₂, and acetylene gases. Lake Erie equipment in the Norris-Thermador Corp. plant includes 26 hydraulic presses ranging in capacity from a giant 6,000 ton model to units of 55 tons capacity. Lake Erie Hydraulic Presses are available in a complete range of types and sizes to meet every possible need. Our engineers will be glad to discuss your requirements and submit their recommendations. No obligation on your part. Call on us at any time.



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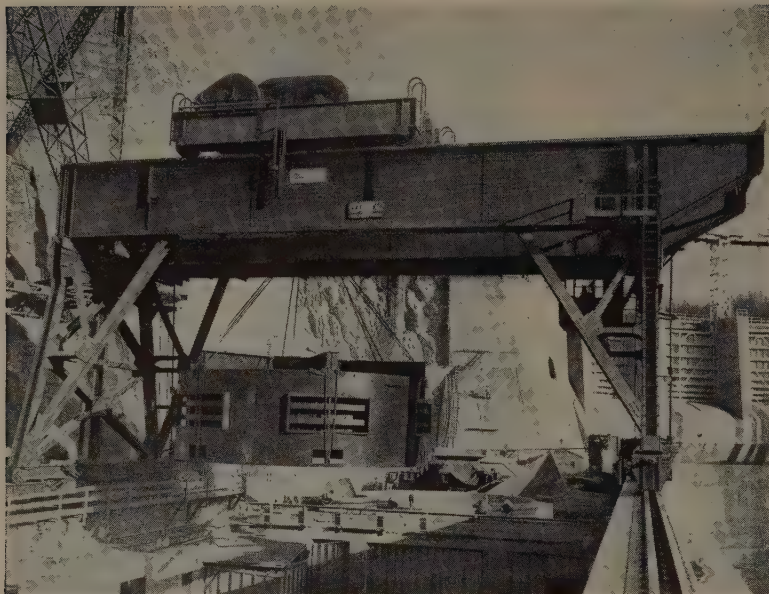
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Bedford Gantry Crane, installed by Ebasco Services, Inc., for Washington Water Power Co., Spokane, at their new Cabinet Gorge Hydro-Electric Station near Clark Fork, Idaho. Conservatively rated at 275 tons, crane easily handles massive rotors up to 330 tons.

Make **YOUR** Next Crane a

Bedford!

Throughout industry—in steel mills, power plants, ship yards . . . wherever superior cranes are required . . . owners enthusiastically recommend Bedford Cranes.

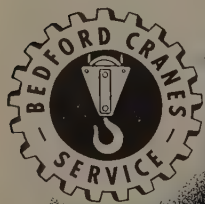
Available in all types and sizes . . . from 5 tons to 350 tons, and up . . . for all kinds of indoor and outdoor service . . . each Bedford Crane is precision engineered for its specific application.

Built to the most modern standards and backed by more than 50

years of specialized crane building experience . . . Bedford Cranes are famous the world over for their advanced design and for their safe, smooth, dependable performance.

Consult a Bedford engineer on your next crane problem (no obligation, of course) . . . and make **YOUR** next crane a Bedford.

(Write for complete catalog describing Bedford Cranes in detail.)



BEDFORD

CRANES

BEDFORD FOUNDRY & MACHINE COMPANY, INC. • BEDFORD, INDIANA

NEW PRODUCTS and equipment

from a machine, through the feeders and back into the machine or into storage tanks for transport or storage. J. N. Fauver Co. Inc., Dept. ST, 4877 Hancock, Detroit 1, Mich.

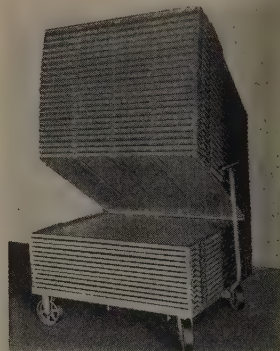
USE REPLY CARD—CIRCLE No. 12

Multitier Leaf Truck

. . . for handling between jobs

Useful for handling between operations, this multitier spring truck is effective where material should not contact each other. Each tier is heavy steel channel stock; tiers are hinged individually to a heavy-duty upright frame.

Each leaf can be locked in set or up position by two coil springs, no



on a side. Rugged welded steel casters insure maximum mobility, but skid base types are available if required. Units are moved easily by hand or lift truck, can be made in any size with desired spacing between tiers. Rack Engineering Co., Dept. ST, Connellsville, Pa.

USE REPLY CARD—CIRCLE No. 13

Production Casting Machine

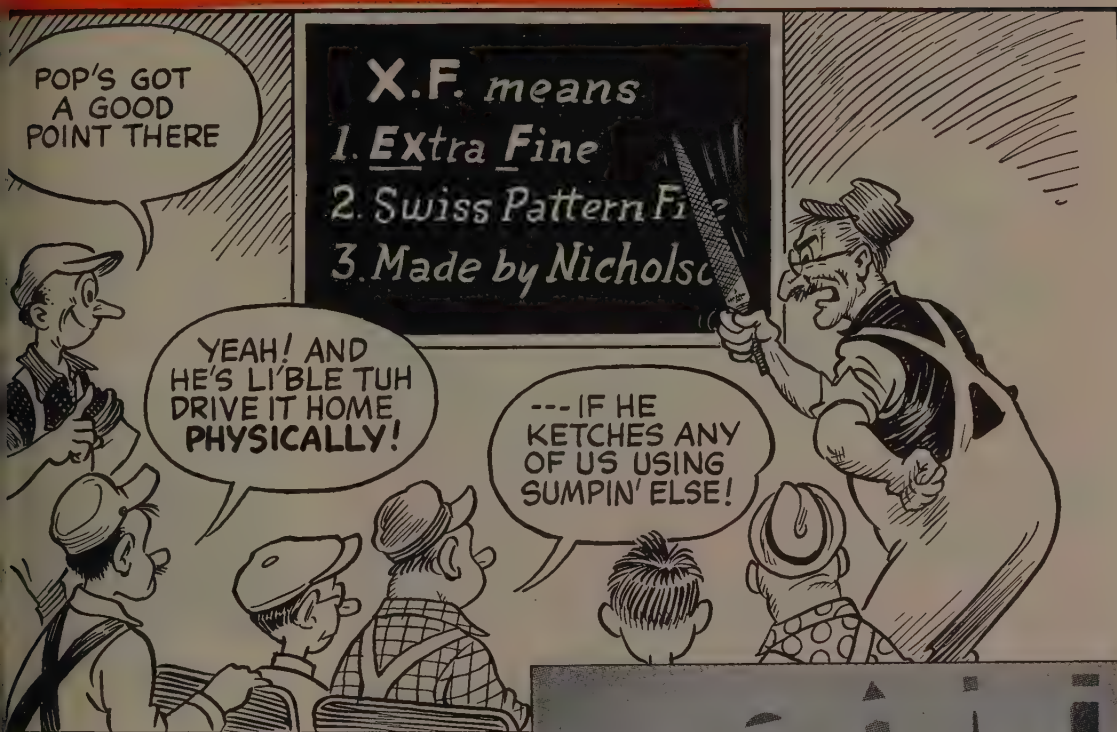
. . . 90 complete molds per hour

Principle of this casting machine involves a simple rubber pneumatic diaphragm with a minimum of moving parts. In operation, steam is compressed in the pattern to insure uniform mold hardness by inflating the diaphragm with air. Uniform mold hardness is governed by controlling air pressure injected into the diaphragm.

Each half of the model's flange is 36 inches wide, 80 inches in diameter and 10 inches high. It produces the rate of 90 complete molds per hour. Manufacturer reports the



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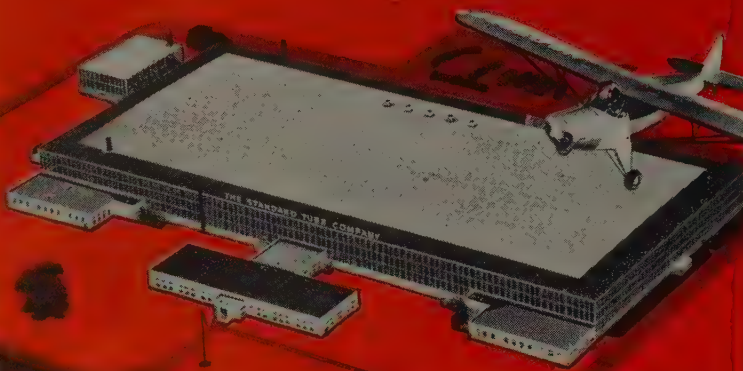
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STEEL TUBING SIZES: ½" O.D. to 5½" O.D. .028 to .260 wall
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NEW PRODUCTS and equipment

chine holds casting weights within ounces. It requires no special mixes and either wooden or plastic patterns can be used. Machine develops an instant molding cycle. No foundation is necessary. Machine Pneumatic Foundry Equipment Corp., Dept. ST, North Philadelphia.

USE REPLY CARD—CIRCLE No. 14

Pitch Diameter Gages

... check jet blade root form

Gage speeds external and internal pitch diameter checking of root forms on jet engine blades and blade carriers. Two units available, both used as hand gages.



in conjunction with the manufacturer's standard Air-O-Limit micrometer F comparator.

Blade root gage design incorporates a carbide roll-type anvil adjustable to accommodate various root form sizes. Gaging point is a carbide ball point spindle that operates the single air nozzle. Carbide roll pressure shoe provides positive location of gage on blade root.

Carrier gage checks pitch diameter of the internal root form of the jet engine blade carrier. Design incorporates carbide roll-type anvil and carbide gaging point. Gaging roll is on a pivot arm that operates the single air nozzle. Fast

USE A REPLY CARD

Just circle the corresponding number of any item in this section for more information.

Hours FOR THE ASKING

TEAR OUT CARD, FILL IN and MAIL TODAY

Solderless Terminals

Craft-Marine Products, Inc.—A uniquely different 20-page booklet titled "The Harrisburg Story" vividly describes the origin, growth, business philosophy and engineering principles of this manufacturer of "in-line" wire terminations, not simply solderless terminals.

Turbidity Recorder

Instrument Co.—The TR-6 Turbidity recorder for measuring amount of light cut off by undissolved substances suspended in fluids is subject of Bulletin 604 which emphasizes operating principles and range of applications.

High Pressure Pumps

American-Marsh Pumps, Inc.—Designed for countless applications including processing, compressing and hydraulic pressure testing, Triplex pumps described in 6-page illustrated Bulletin 13-295 are available for 600 to 10,000 psi service in capacities from 1.1 to 100 gpm. Direct drive and back drive types are covered.

Alloy Steel Specs

Er A. Frasse & Co.—On one file folder, designated as Sec. D, No. 101, you will find government specifications and analyses for alloy steel, showing the nearest corresponding SAE, AISI and AMS numbers.

Grinders & Buffers

Key-Wolf Machine Co.—There's a booklet for every type of electric grinder for practically every general grinding requirement shown in 36-page illustrated catalog 72. In addition to listing such accessories as dust collectors, eye shields and guards, booklets give data on angle, bench, disk, drill,

external, internal, snagging, tool post, vertical spindle and other types of grinders, buffers and polishing machines.

75. Plating Rack Coating

United Chromium, Inc.—Illustrated data sheet RC-2 deals with properties and uses of Unichrome Coating 218X. This plastisol material is suitable for coating plating and conveyor racks, degreasing and dipping baskets, plating barrels, drainboards, ductwork, agitators, tank grids, tanks and drums.



76. Corrosionproof Paint

Monroe Co.—4-page illustrated bulletin C-54-8 states that Monco-Aluminum-chromium paint is available in several grades which are adaptable for protection of all surfaces whether interior or exterior, hot or cold. Finish forms a base coat of oil and a top coat of overlapping aluminum-chromium flakes.

77. Cast Steel Sheaves

Farrell-Cheek Steel Co.—6-page illustrated bulletin 40-GR-652 contains dimensions and application information on type 85 alloy cast steel sheaves which have clean, smooth, hard and tough "cable saver" grooves. Also covered briefly are traveling type choker hooks, standard choker hooks and wire rope sockets.

78. Furnaces & Carburizers

American Gas Furnace Co.—Construction, features, specifications and other data pertinent to oven furnaces and vertical retort gas carburizers are given in illustrated 4-page bulletins 200 and 1220, respectively. Large single and double entrance ovens which maintain 1800 to 2000° F temperatures are covered in first booklet.

1-19-53

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PRODUCTS
MANUFACTURED

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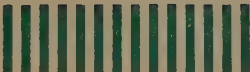
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PRODUCTS
MANUFACTURED

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79. Industrial Sweeper

Lull Mfg. Co.—According to 2-page illustrated bulletin AD-41A the new automatic terrain compensator has been added to the entire line of Lull sweepers. This spring-loaded float device compensates for uneven terrain automatically and maintains constant broom-ground contact pressure to assure clean sweeping.

80. Carbon Steel Bars

La Salle Steel Co.—“Your Blueprint to New Economies in the Use of Steel Bars” is title of this 12-page illustrated bulletin which outlines characteristics, uses and properties of Stressproof cold finished carbon steel bars.

81. Sheet Steel Separator

Basco Mfg. Co.—Two sizes of the Basco sheet steel separators are described and illustrated in this 2-page bulletin. One is a three-high heavy duty unit and other is smaller two high unit. Height, width, number of magnets, maximum stack height, etc., are covered.

82. Wire Rope Care & Use

A. Leschen & Sons Rope Co.—When you carry 72-page illustrated manual C-51 around in your pocket (it will fit conveniently without folding), you will have at your fingertips much practical information on the use and care of wire rope. If it concerns wire rope, the manual has it.



87. Drives & Controls

Reprints comprising the “Forum on Technical Progress” in STEEL’s Metalworking Yearbook Issue includes one on “Drives and Controls.” Special emphasis is given to trends in the uses of adjustable speed drives, servomechanisms, worm gears, hydraulics and pneumatics. These are cited as the answer to today’s demand for faster, more reliable production tools.

88. Cleaning & Finishing

“Cleaning and Finishing” is title of STEEL Yearbook reprint which reviews the progress of surface treatment technology in 1952. Nickel restrictions forced platers to search for substitute finishes. The pay-off was better corrosion-resistance and improved appearance.

83. Sheet Feeding Tables

Raymond Corp.—Complete data on 4000 and 6000-lb capacity sheet feeding tables are contained in 2-page illustrated bulletin 264. These elevating tables have tilt tops and simplify many handling operations.

84. Maintenance Control

Remington Rand Inc.—Prescribed controlled preventive maintenance reduces costly down-time, minimum and eliminates the need for large emergency crews. For information on this procedure plus a system which uses visible records for maintenance control, we recommend FD-KD-705.

85. Air-Operated Pumps

Lincoln Engineering Co.—List of air motor-operated pumps and accessories for automatic dispensing application of sealers, adhesives, bonding and caulking compounds is described and illustrated in catalog 4. Eleven standard models for screw gun, pole gun and Flo-Gun applications are shown.

86. Industrial Trucks

Lewis-Shepard Products Inc.—112 illustrated pages, catalog 34 describes two units in Master line of industrial trucks—the Jacklift Electric and the Jackstacker. Engineering and operating features are covered with engineering drawings, specs and maintenance features are included.

**EDITORIAL
REPRINTS:**

89. Inspecting & Testing

Scientific inspection in early stages of manufacture not only finds defects but helps prevent them. Procedure made in field of radiography inspection, which includes atomic radiation and the use of Cobalt 60, covered under discussion in informative Yearbook reprint “Inspecting and Testing.”

90. Heat Treating

With today’s equipment and modern production men are turning out heat-treated parts having necessary properties to meet engineering requirement. In STEEL Yearbook reprint entitled “Heat Treating” is reported advances made in the heat treatment of steels in role carbon plays, carburizing equipment and quenching.

PRODUCTS and equipment

itney, division of Niles-Bepond Co., Dept. ST, W. Hartford, Conn.
REPLY CARD—CIRCLE No. 15

Speed Hand Tool

Incorporates collet chuck

table high
hand tool
adaptable for
ion grind-
or cutting
on produc-
or mainte-
work.
B-2 Disk
has no-load
de shaft
of about 9000 rpm, is limited
4-inch disk.



improvements in the current
include use of a cast alumi-
air intake cover and double-
ing fan to increase cooling effi-
y. Instead of a separate col-
chuck available for attachment,
B-2 model incorporates the
in the spindle. Result is re-
overhang on some attach-
s by almost 1 inch. This as-
accurate centering. Franklin
ar Corp., Dept. ST, 3500 Clip-
d., Baltimore, Md.

REPLY CARD—CIRCLE No. 16

Capacitor Equipment

for wye or delta systems

300-kvar, open-type, auto-
matically switched capacitor
ment for 15-kv ungrounded
or delta systems has a basic
voltage level of 95 kv. The 25-
capacitors are mounted on
metal insulators to provide in-
sulated insulation. For protect-
equipment from voltage surges,
voltage lightning arresters may be
General Electric Co., Dept.
Schenectady 5, N. Y.

REPLY CARD—CIRCLE No. 17

USE A REPLY CARD

Just circle the corresponding
number of any item in this
section for more information.

Now the **LOWEST COST**
Dye Penetrant
Inspection

Spotcheck

by **MAGNAFLUX**
Ends Guesswork Arguments!

Locates and marks cracks — seams —
porosity — laps, etc. — when open to
the surface... Use it on metals —
carbides — plastics — ceramics or
practically any other non-porous solid.

*Brush-
Dip-
or Spray*

CHECK THESE LOW PRICES

Typical casting crack as revealed by Spot-
check in sampling or maintenance inspection

Quantity	Cleaner		Penetrant		Developer	
	Single Can	Case Lots	Single Can	Case Lots	Single Can	Case Lots
12 oz. Pressure Can	\$4.50 ea.	(12 cans) \$2.00 per can	\$4.50 ea.	(12 cans) \$2.50 per can	—	—
Pint Cans	—	—	\$4.00 ea.	(12 cans) \$2.25 per can	\$4.00 ea.	(12 cans) \$2.00 per can
Quart Cans	—	—	\$6.00 ea.	(5 cans) \$4.00 per can	\$5.00 ea.	(5 cans) \$3.00 per can
1-Gallon Cans	\$3.00 ea.	(10 gallons) \$2.50 per gal.	\$15.00 ea.	(10 gallons) \$14.00 per gal.	\$9.00 ea.	(10 gallons) \$8.50 per gal.
5-Gallon Cans	\$2.50 per gal.	(50 gallons or more) \$2.00 per gal.	\$13.00 per gal.	(50 gallons or more) \$10.00 per gal.	\$7.50 per gal.	(50 gallons or more) \$7.00 per gal.

All prices F.O.B. Chicago, Illinois. Spotcheck inspection requires application of Cleaner, Penetrant and Developer. Order quantity desired of each on your company purchase order.

Also complete kits for
**HANDY SPRAY
AND BRUSH
APPLICATION**

\$35.00 plus \$1.00

shipping
and
handling

Eight assorted cans of Cleaner,
Penetrant and Developer; ac-
cessories, instruction book and
carrying case.

FOR COMPLETE KIT ORDER NOW



MAGNAFLUX CORPORATION
5912 Northwest Highway, Chicago 31, Ill.

Please send.....Type SK-1 SPOTCHECK KITS at
\$35.00 each, plus \$1.00 each, packing and shipping cost.

- ☐ CHECK ENCLOSED. Amount: \$.....
☐ Send on our P. O. Number.....
☐ Send only FREE illustrated bulletin, now.

Name.....Title.....

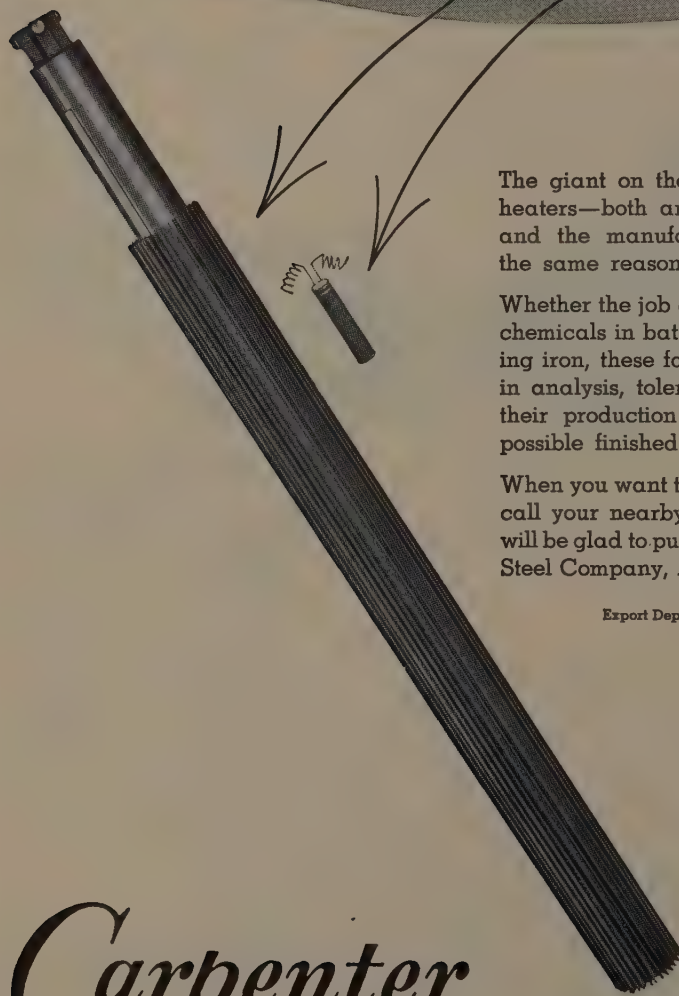
Company.....

Address.....

City.....Zone.....State.....

Prices subject to applicable state or local sales tax.

Whether the job is BIG or small uniform *Carpenter* tubing speeds fabrication



The giant on the left and the pygmy on the right are immersion heaters—both are made from Carpenter Stainless Tubing—and the manufacturers selected Carpenter for essentially the same reasons.

Whether the job calls for a large immersion heater for heating chemicals in batch tanks or a small heating unit for a soldering iron, these fabricators know that the consistent uniformity in analysis, tolerance and finish of Carpenter tubing makes their production move smoothly and gives them the finest possible finished product.

When you want to discuss your design or fabricating problem, call your nearby Carpenter Stainless Tubing Distributor. He will be glad to put his experience to work for you. The Carpenter Steel Company, Alloy Tube Division, Union, N. J.

Export Dept.: The Carpenter Steel Co., Port Washington, N. Y. "CARSTEEL"

Carpenter

STAINLESS TUBING & PIPE



Analysis →

← Tolerance

← Finish

• guaranteed on every shipment

HERE'S new evidence that a balance between steel supply and demand continues to approach.

In the East, pressure on warehouses for steel is easing slightly. First apparent in tool steels and other specialties, the trend now extends over more finished steel products. Warehouses in that area also note a reduction in inquiries from large buyers who deal directly with the mills when steel is available but who fall back on higher-priced warehouse steel when mills can't supply all their needs.

BONUS—Another indication of the improvement in supply and demand balance is the possibility that National Production Authority will give civilian consumers, such as producers of stoves, refrigerators and similar goods, a second-quarter allotment of steel equal to 90 per cent of the amount they used in the average quarter prior to the Korean war. They were previously scheduled to get only 70 per cent. Copper and aluminum allotments to these consumers will be boosted also.

A FORECAST—The continued march toward a matching of demand and supply should put the average consumer's steel inventory in balance by July 1, the NPA believes. It is estimated conservatively that 5 million to 7 million tons of finished steel (equivalent to three to four weeks' production) will be necessary to rebuild balanced inventories equal to 60 days' full requirements. At the present rate of consumption this will take six months.

PINCHED—Many steel consumers have plenty of some finished steel products but they lack certain other needed forms.

Another change that stands out in the demand picture is a decline in inquiries for large diameter fabricated pipe, a product that has been booked up far ahead for the expansion in the nation's pipelines. This decline reflects completion of some of the major lines. However, further new programs are being developed. Pipe fabricators expect a spurt in demand from Canada before long.

Contrary to most estimates, relief in the shortage

of sheets is coming first in galvanized sheets. Hot-rolled and cold-rolled carbon sheets continue in very strong demand.

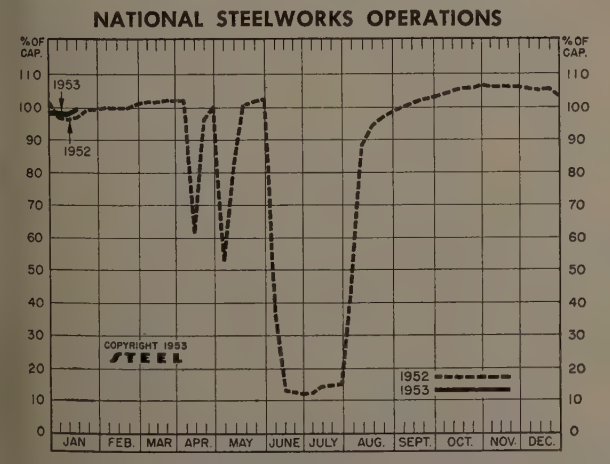
SPOTTY—Improvement in balance between steel supply and demand is spotty. All products and all geographical areas of the country are not affected alike.

Products in fairly free supply throughout most of the country are bolts and nuts, nails, merchant wire, some types of manufacturers wire, ure rope, tool steel, hot-rolled and cold-rolled bars under an inch in diameter, floor plate, welded pipe 3 inches and under, welded carbon mechanical tubing, tin plate, terne plate, tin mill black plate, straight chrome stainless steel and merchant pig iron.

HEADACHES—Making the steel buyers' job difficult is the insufficiency of such major products as hot-rolled and cold-rolled carbon sheets, hot-rolled and cold-finished carbon and alloy bars over 1 inch in diameter and heavy and wide sheared carbon plate.

Demand for structural steel has been held down to some extent by government restrictions on construction but mills still are booked full for this product. The restrictions now, however, are less severe than they were. In an effort to obtain the structural tonnage they need, fabricators on the East Coast are buying an increasing amount of foreign structurals. Also encouraging purchase of this foreign steel are reductions in the price of it to around 5 cents a pound net, Boston dock. The most prevalent prices of U. S. mills in the eastern part of the country is 3.85 to 3.90 cents.

RECORD BREAKER—The over-all strong demand for steel continues to bring out new production records. Latest one was set in the week ended Jan. 17 when output of steel for ingots and castings was at 99.5 per cent of capacity. This yielded 2,243,000 net tons. Rate of output in the week ended Jan. 10 was 98 per cent. Capacity now is 2,254,459 net tons per week.



DISTRICT INGOT RATES				
Percentage of Capacity Engaged at Leading Production Points				
	Week Ended Jan. 17	Change	Same Week 1952	Same Week 1951
Pittsburgh	105.5	0*	99	99
Chicago	106	0*	102	101
Mid-Atlantic	94†	0*	101	99.5
Youngstown	106	0	106	106
Wheeling	101	0	100.5	97
Cleveland	109.5	+ 4.5*	102.5	100
Buffalo	106.5	0	104	104
Birmingham	97†	0*	104	100
New England	89	0	85	89
Cincinnati	93	0	103	102
St. Louis	83	0	76	95
Detroit	101.5	- 2.5*	103	105
Western	105.5	- 3.5	97	103
Estimated national rate	99.5†	+ 1.5	97	99.5

*Change from revised rate for preceding week.

†Estimated national, Mid-Atlantic and Birmingham rates are based on Jan. 1, 1953, capacities; others, on Jan. 1, 1952, capacities.

Weekly steelmaking capacity is estimated at 2,254,459 net tons in 1953; 2,077,040 tons in 1952; 1,999,034 tons in 1951.

Composite Market Averages

FINISHED STEEL PRICE INDEX:	Jan. 13	Jan. 6	Month	December
(Bureau of Labor Statistics)	1953	1953	Ago	Average
(1947-1949=100)	130.7	130.7	130.6	130.6

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)

Week Ended Jan. 13, 1953

Units are 100 lb except where otherwise noted below in parentheses. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

Rails	\$3.775	Sheets, C.R. carbon	\$5.275
Track spikes	6.650	Sheets, galv.	6.915
Track bolts	9.958	Strip, C.R. carbon	5.100
Tie plates	4.775	Strip, C.R. stainless (lb)	0.325
Joint bars	4.925	Pipe, black, buttwd (100 ft)	7.090
Plates, carbon	4.150	Pipe, galv., buttwd (100 ft)	8.997
Structural shapes	4.200	Boiler tubes (100 ft)	31.663
Bars, tool steel (lb)	1.576	Tin plate (100 lb base box)	8.950
Bars, 3120 alloy	6.575	Terne plate (100 lb base box)	7.750
Bars, stainless (lb)	0.149	Wire, carbon, merchant	6.075
Bars, carbon	4.100	Wire, fence, galv.	6.458
Bars, reinforcing	4.050	Nails (100 lb kegs)	7.410
Bars, C.F. carbon	5.925	Wire, barbed (80 rod spool)	5.920
Sheets, H.R. carbon	4.125	Woven wire fence (20 rod roll)	13.720

FINISHED PRICE INDEX, Weighted:
Calculated by STEEL*

	Jan. 15	Week	Month	Year	5 Yrs.
	1953	Ago	Ago	Ago	Ago
Index (1935-39 av.=100)	181.31	181.31	181.31	171.92	132.93
Index in cents per lb.	4.912	4.912	4.912	4.657	3.601

ARITHMETICAL PRICE COMPOSITES:

Calculated by STEEL*

Finished Steel, NT	\$110.98	\$110.98	\$110.98	\$106.32	\$73.13
No. 2 Fdry, Pig Iron, GT	55.04	55.04	55.04	52.24	39.59
Basic Pig Iron, GT	54.66	54.66	54.66	52.16	39.125
Malleable Pig Iron, GT	55.77	55.77	55.77	53.27	40.20
Steelmaking Scrap, GT	43.00	43.00	43.00	43.00	41.92

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composites, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	Jan. 15	Week	Month	Year	5 Yrs.
	1953	Ago	Ago	Ago	Ago
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.90
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.90
Bars, H.R., del Philadelphia	4.502	4.502	4.502	4.223	3.536
Bars, C.F., Pittsburgh	4.925	4.925	4.925	4.55	3.55
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.90
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.90
Shapes, del., Philadelphia	4.13	4.13	4.13	3.918	2.968
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.95
Plates, Chicago	3.90	3.90	3.90	3.70	2.95
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.40
Plates, Sparrows Point, Md.	3.90	3.90	3.90	3.70	2.95
Plates, Claymont, Del.	4.35	4.35	4.35	4.15	3.40
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60-75	2.80
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.80
Sheets, C.R., Pittsburgh	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Chicago	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.70
Sheets, Galv., Pittsburgh	5.075	5.075	5.075	4.80	3.95
Strip, H.R., Pittsburgh	3.725	3.725	3.725	3.75-4.00	2.80
Strip, H.R., Chicago	3.725	3.725	3.725	3.55	2.80
Strip, C.R., Pittsburgh	5.10-5.80	5.10-5.80	5.10-5.80	4.65-5.35	3.85
Strip, C.R., Chicago	5.35	5.35	5.35	4.90	3.85
Strip, C.R., Detroit	5.30-6.05	5.30-6.05	5.30-6.05	4.85-5.60	3.70
Wire, Basic, Pittsburgh	5.10-5.225	5.10-5.225	5.10-5.225	4.85-5.10	3.675
Nails, Wire, Pittsburgh	6.20-6.35	6.20-6.35	6.20-6.35	5.90-6.20	4.70
Tin plate box, Pittsburgh	\$8.95	\$8.95	\$8.95	\$8.70	\$6.70

SEMIFINISHED

Billets, forging, Pitts. (NT)	\$70.50	\$70.50	\$70.50	\$66.00	\$56.50
Wire rods, $\frac{1}{2}$ -%, Pitts.	4.425	4.425	4.425	4.10-30	3.05

PIG IRON, Gross Ton

Bessemer, Pitts.	\$55.50	\$55.50	\$55.50	\$53.00	\$40.00
Basic Valley	54.50	54.50	54.50	52.00	39.00
Basic, del. Phila.	59.25	59.25	59.25	56.81	42.004
No. 2 Fdry, Pitts.	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry, Chicago	55.00	55.00	55.00	52.50	39.00
No. 2 Fdry, Valley	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry, del. Phila.	59.75	59.75	59.75	57.11	42.504
No. 2 Fdry, Birm.	51.38	51.38	51.38	49.88	37.38
No. 2 Fdry (Birm.) del. Cin.	58.93	58.93	58.93	56.49	40.74
Malleable, Valley	55.00	55.00	55.00	52.50	39.50
Malleable, Chicago	55.00	55.00	55.00	52.50	39.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	55.00
Ferromanganese, Etna, Pa.	228.00	228.00	228.00	188.00	151.00*

*F.o.b. cars, Pittsburgh.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt, Pitts.	\$44.00	\$44.00	\$44.00	\$44.00	\$40.50
No. 1 Heavy Melt, E. Pa.	41.50	41.50	41.50	42.50	46.00
No. 1 Heavy Melt, Chicago	42.50	42.50	42.50	42.50	39.25
No. 1 Heavy Melt, Valley	44.00	44.00	44.00	44.00	40.25
No. 1 Heavy Melt, Cleve.	43.00	43.00	43.00	43.00	39.75
No. 1 Heavy Melt, Buffalo	43.00	43.00	43.00	43.00	43.50
Rails, Rerolling, Chicago	52.50	52.50	52.50	52.50	60.00
No. 1 Cast, Chicago	43.00	43.00	45.00	49.00†	63.50

†F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn, Connsvl.	\$14.75	\$14.75	\$14.75	\$14.75	\$12.00-13.00
Beehive, Fdry, Connsvl.	17.00	17.00	17.00	17.50	14.00-15.00
Oven Fdry, Chicago	24.50	24.50	24.50	23.00	18.00

PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% local tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Be-
Bethlehem, Pa. B2	\$56.50	\$57.00	\$57.50	\$50.00
NewYork, del.		60.78	61.28	
Newark, del.	59.52	60.02	60.52	61.2
Philadelphia, del.	59.25	59.75	60.25	61.5
Birmingham District				
AlabamaCity, Ala. R2	50.88	51.38		
Birmingham R2	50.88	51.38		
Birmingham S9		51.38		
Woodward, Ala. W15	50.88	51.38		
Cincinnati, del.		58.93		
Buffalo District				
Buffalo R2	54.50	55.00	55.50	
Buffalo H1	54.50	55.00	55.50	
Tonawanda, N.Y. W12	54.50	55.00	55.50	
No. Tonawanda, N.Y. T9		55.00	55.50	
Boston, del.	65.15	65.65	66.15	
Rochester, N.Y. del.	57.52	58.02	58.52	
Syracuse, N.Y. del.	58.62	59.12	59.62	
Chicago District				
Chicago I-3	54.50	55.00	55.00	51.00
Gary, Ind. U5	54.50		55.00	
Indiana Harbor, Ind. I-2	54.50		55.00	
So. Chicago, Ill. W14	54.50	55.00	55.00	
So. Chicago, Ill. Y1	54.50	55.00	55.00	
So. Chicago, Ill. U5	54.50		55.00	
Milwaukee, del.	56.67	57.17	57.67	51.00
Muskegon, Mich., del.		61.30	61.30	
Cleveland District				
Cleveland A7	54.50	55.00	55.00	51.00
Cleveland R2	54.50	55.00	55.00	
Akron, O., del. from Cleve.	57.11	57.61	57.61	51.00
Lorain, O. N3	54.50			50.00
Duluth I-3			55.00	
Erie, Pa. I-3	54.50	55.00	55.00	50.00
Everett, Mass. E1		59.50	60.00	
Pontana, Calif. K1	60.50	61.00		
Granite City, Ill. G4	56.40	56.90		
St. Louis, del. (inc. tax)	57.15	57.65	58.15	
Iron, Utah C11	54.50	55.00		
Geneva, Utah C11	54.50	55.00		
LoneStar, Tex. L8	50.50	*51.00	51.00	
Minnequa, Colo. C10	56.50	57.50	57.50	
Rockwood, Tenn. C3			58.50	
Pittsburgh District				
NevilleIsland, Pa. P6		55.00	55.00	50.00
Pitts., N.&S. sides, Ambridge				
Aliquippa, del.		56.37	56.37	50.00
McKees Rocks, del.		56.04	56.04	50.00
Lanceville, Homestead,				
Wilmerding, Monaca, del.		56.66	56.66	50.00
Verona, Trafford, del.		57.19	57.19	51.00
Brackenridge, del.		57.45	57.45	51.00
Bessemer, Pa. U5	54.50		55.00	50.00
Clairton, Rankin, So. Duquesne, Pa. U5	54.50			
McKeesport, Pa. N3	54.50			50.00
Monessen, Pa. P7	56.50			
Sharpsville, Pa. S6			55.00	50.00
Steelton, Pa. B2	56.50	57.00	57.50	50.00
Swedeland, Pa. A3	58.50	59.00	59.50	50.00
Toledo, O. I-3	54.50	55.00	55.00	50.00
Cincinnati, del.	59.97	60.47		
Troy, N.Y. R2	56.50	57.00	57.50	50.00
Youngstown District				
Hubbard, O.	54.50	55.00	55.00	
Youngstown Y1	54.50	55.00	55.00	
Youngstown U5	54.50			50.00
Mansfield, O., del.	59.15	59.65	59.65	50.00

* Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and more; or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add \$2 per ton; each additional 0.25%, add \$1 per ton.

BLAST FURNACE SILVER PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add \$1.50 for each 0.5% Si)
Jackson, O. G2, J1

Buffalo H1

ELECTRIC FURNACE SILVER PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add \$1 for each 0.5% Si to 18%; each 0.5% Mn over 1%; \$2 per gross ton premium for 0.045% Mn)
Niagara Falls, N.Y. P15

Keokuk, Iowa, Openheart & Fdry, frt. allowed K2

Keokuk, OH & Fdry, 12% lb piglets, 16% Si, frt. allowed K2

Wentachee, Wash., OH & Fdry, frt. allowed K2

CHARCOAL PIG IRON, Gross Ton

(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)
Lyles, Tenn. T3

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, Intermediate, A7

Steelton, Pa. B2

Philadelphia, delivered

Troy, N.Y. R2

MARKET PRICES

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler, Pa. A10	4.575
Cleveland J5, R2	4.575
Ecorse, Mich. G5	4.775
Fairfield, Ala. T2	4.575
Follansbee, W.Va. F4	5.675
Fontana, Calif. K1	5.625
Gary, Ind. U5	4.575
Granite City, Ill. G4	5.275
Ind. Harbor, Ind. I-2, Y1	4.575
Irvin, Pa. U5	4.575
Lackawanna, N.Y. B2	4.575
Middletown, O. A10	4.575
Pittsburgh, Calif. C11	5.625
SparrowsPoint, Md. B2	5.675
Staubenville, O. W10	4.575
Warren, O. R2	4.575
Weirton, W.Va. W6	4.575
West Leeburg, Pa. A4	5.475
Youngstown Y1	4.575

BLACK PLATE (Base Box)

Alliquippa, Pa. J5	8.325
Fairfield, Ala. T2	6.60
Gary, Ind. U5	6.50
Granite City, Ill. G4	6.70
Ind. Harbor, Ind. I-2, Y1	6.50
Irvin, Pa. U5	6.50
Niles, O. R2	6.50
Pittsburgh, Calif. C11	7.25
SparrowsPoint, Md. B2	6.60
Warren, O. R2	6.50
Weirton, W.Va. W6	6.50
Yorkville, O. W10	6.50

HOLLOWARE ENAMELING (Black Plate (29 gage))

Follansbee, W.Va. F4	6.10
Gary, Ind. U5	6.10
Granite City, Ill. G4	6.30
Ind. Harbor, Ind. Y1	6.10
Irvin, Pa. U5	6.10
Yorkville, O. W10	6.35

SHEETS, Galv'd No. 10 Steel

Alabama City, Ala. R2	5.075
Ashland, Ky. (8) A10	5.075
Canton, O. R2	5.075
Delplos, O. N16	5.675
Dover, O. R1	5.775
Fairfield, Ala. T2	5.675
Gary, Ind. U5	5.675
Granite City, Ill. G4	5.50
Ind. Harbor, Ind. I-2	5.075
Irvin, Pa. U5	5.075
Kokomo, Ind. (13) C16	5.475
Martins Ferry, O. W10	5.075
Niles, O. N12	5.675
Pittsburgh, Calif. C11	6.525
SparrowsPoint, Md. B2	5.075
Staubenville, O. W10	5.075
Torrance, Calif. C11	5.825
Weirton, W.Va. W6	5.075

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin, Pa. U5	7.725
SparrowsPoint (39) B2	7.725

SHEETS, Galvannealed Steel

Canton, O. R2	5.625
Irvin, Pa. U5	5.625
Kokomo, Ind. (13) C16	5.625
Niles, O. N12	5.625

SHEETS, ZINCGRIP Steel No. 10

Butler, Pa. A10	5.325
Middletown, O. A10	5.325

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.925
Niles, O. R2 (28)	5.925
Weirton, W.Va. W6	5.775

SHEETS, Well Casing

Fontana, Calif. K1 (43)	5.10
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BLUED STOCK, 29 ga.

Yorkville, O. W10	7.00
Follansbee, W.Va. F4	7.10
Pittsburgh (23) F4	6.425

SHEETS, Enameling Iron

Ashland, Ky. (8) A10	4.925
Cleveland R2	4.925
Gary, Ind. U5	4.925
Granite City, Ill. G4	5.625
Ind. Harbor, Ind. I-2	4.925
Irvin, Pa. U5	4.925
Middletown, O. A10	4.925
Youngstown Y1	4.925

TIN PLATE, Electrolytic (Base Plate)

	0.25 lb	0.50 lb	0.75 lb
Alliquippa, Pa. J5	\$7.40	\$7.65	\$8.05
Fairfield, Ala. T2	7.50	7.75	8.15
Gary, Ind. U5	7.40	7.65	8.05
Granite City, Ill. G4	7.60	7.85	8.25
Indiana Harbor, Ind. I-2, Y1	7.40	7.65	8.05
Irvin, Pa. U5	7.40	7.65	8.05
Niles, O. R2	7.40	7.65	8.05
Pittsburgh, Calif. C11	8.15	8.40	8.80
SparrowsPoint, Md. B2	8.50	7.75	8.15
Weirton, W.Va. W6	7.40	7.65	8.05
Yorkville, O. W10	7.40	7.65	8.05

SHEETS, SILICON (22 Ga. Base)

	Field	Electric	Motor	Dyna-
BeechBottom W10 (cut lengths)	7.55	7.85	9.10	9.90
Brackenridge, Pa. A4	7.55	7.85	9.10	9.90
Granite City, Ill. G4 (cut lengths)	7.55	7.85	9.10	9.90
Indiana Harbor, Ind. I-2	7.55	7.85	9.10	9.90
Mansfield, O. E6 (cut lengths)	7.20	7.35	7.85	9.10
Niles, O. N12 (cut lengths)	7.05	7.35	7.85	9.10
Vandergrift, Pa. U5	7.55	7.85	9.10	9.90
Warren, O. R2	7.55	7.85	9.10	9.90
Zanesville, O. A10	7.55	7.85	9.10	9.90

SHEETS, SILICON (22 Ga. Base)

	T-100	T-90	T-80	T-73
Butler, Pa. A10 (C.R.)	13.50	14.35	15.35	15.85
Vandergrift, Pa. U5	13.50	14.35	15.35	15.85

MANUFACTURING TERNES (Special Coated)

Fairfield, Ala. T2	7.85
Gary, Ind. U5	7.75
Irvin, Pa. U5	7.75
Yorkville, O. W10	7.75

SHEETS, LT. Coated Ternes, 6 lb

Sharon, Pa. S3	4.225
So. Chicago, Ill. W14	4.375
So. San Francisco (25) B3	4.475
SparrowsPoint, Md. B2	3.725
Torrance, Calif. C11	4.475
Warren, O. R2	3.725
Weirton, W.Va. W6	3.825
West Leeburg, Pa. A4	3.975
Youngstown U5, Y1	3.725

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom, W.Va. W10	5.475
Gary, Ind. U5	5.475
Mansfield, O. E6	6.05
Middletown, O. A10	5.475
Niles, O. N12	6.275
Weirton, W.Va. W6	5.475

SHEETS, Long Terne, Ingot Iron

Middletown, O. A10	5.575
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ROOFING SHORT TERNES (8 lb. Coated)

Gary, Ind. U5	9.75
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STRIP, Hot-Rolled

Bessemer, Ala. Y2	6.15
Conshohocken, Pa. A3	5.90
Ecorse, Mich. G5	6.30
Fairfield, Ala. T2	5.65
Fontana, Calif. K1	6.55
Gary, Ind. U5	5.65
Ind. Harbor, Ind. I-2	5.65
Irvin, Pa. U5	6.15
Lackawanna, N.Y. B2	7.00
Los Angeles (25) B3	6.40
Seattle (25) B3	6.65
Sharon, Pa. S3	5.65
So. San Francisco (25) B3	6.40
SparrowsPoint, Md. B2	5.70
Warren, O. R2	5.65
Weirton, W.Va. W6	6.10
Youngstown Y1	5.65

STRIP, Cold-Rolled

Cleveland J5	7.45
Cleveland A7	7.30
Dover, O. G6	8.00
Ecorse, Mich. G5	8.15
Lackawanna, N.Y. B2	7.90
Sharon, Pa. S3	7.30
SparrowsPoint, Md. B2	7.90
Weirton, W.Va. W6	7.95
Youngstown Y1	7.80

STRIP, Hot-Rolled Carbon

Ala. City, Ala. (27) R2	3.725
Alton, Ill. L1	4.20
Ashland, Ky. (8) A10	3.725
Atlanta A11	4.275
Bessemer, Ala. T2	3.725
Bridgeport, Conn. (10) S15	4.225
Buffalo (27) R2	3.725
Butler, Pa. A10	3.725
Carnegie, Pa. S18	4.225
Conshohocken, Pa. A3	4.125
Detroit M1	4.40
Ecorse, Mich. G5	4.025
Fairfield, Ala. T2	3.725
Fontana, Calif. K1	4.975
Gary, Ind. U5	3.725
Houston, Tex. S5	4.125
Ind. Harbor, Ind. I-2, Y1	3.725
Johnstown, Pa. (25) E2	3.725
Kansas City, Mo. (9) S5	4.325
Lackawanna, N.Y. (32) B2	3.725
Los Angeles (25) B3	4.475
Milton, Pa. B6	4.35
Minnequa, Colo. C10	4.775

New Britain (10) S15	4.225
N. Tonawanda, N.Y. B11	3.725
Pittsburgh, Calif. C11	4.475
Riverside, Ill. A7	3.725
San Francisco S7	5.00
Seattle (25) B3	4.725
Seattle N14	4.75
Sharon, Pa. S3	4.225
So. Chicago, Ill. W14	4.375
So. San Francisco (25) B3	4.475
SparrowsPoint, Md. B2	3.725
Stanton, N.J. R5	4.75
Torrance, Calif. C11	4.475
Warren, O. R2	3.725
Weirton, W.Va. W6	3.825
West Leeburg, Pa. A4	3.975
Youngstown U5, Y1	3.725

STRIP, Hot-Rolled Alloy

Bridgeport, Conn. (10) S15	6.05
Carnegie, Pa. S18	6.45
Fontana, Calif. K1	7.30
Warren, O. R2	6.10

STRIP, Cold-Rolled Carbon

Bridgeport, Conn. (10) S15	5.50
Butler, Pa. A10	5.10
Cleveland A7, J5	5.10
Dearborn, Mich. D3	6.05
Detroit D2	5.60
Detroit M1	5.45
Dover, O. (40) G6	5.50
Ecobridge, Ind. (40) G6	5.50
Follansbee, W.Va. F4	5.90
Fontana, Calif. K1	6.75
Franklin Park, Ill. (40) T6	5.35
Ind. Harbor, Ind. I-2	5.35
Lackawanna, N.Y. B2	5.10
Los Angeles C1	6.85
Mattapan, Mass. T6	5.95
Middletown, O. A10	5.10
New Britain (10) S15	5.80

STRIP, Cold-Finished, 0.26

Spring Steel (Annealed) 0.40C	0.60C	0.80C	1.05C
Berea, O. C7	7.65	8.25	10.20
Bridgeport, Conn. (10) S15	5.80	7.65	8.25
Bristol Conn. W1	7.65	8.25	10.20
Carnegie, Pa. S18	7.65	8.25	10.20
Cleveland A7	5.10	7.30	8.25
Dearborn, Mich. D3	6.05	7.90	8.50
Detroit D2	6.45	7.50	8.10
Dover, O. G6	5.70	7.65	8.25
Franklin Park, Ill. T6	5.45	7.45	8.40
Harrison, N.J. C18	7.60	8.55	10.50
Mattapan, Mass. T6	5.95	7.60	8.55
New Britain, Conn. (10) S15	5.80	7.65	8.25
New Castle, Pa. B4	5.80	7.65	8.25
New Castle, Pa. E5	5.80	7.65	8.25
New Haven, Conn. D2	6.70	7.60	8.20
New York W3	7.95	8.55	10.50
Pawtucket, R.I. N8:	7.65	8.25	10.20
Cleve. or Pitts. Base	6.30	7.95	8.55
Worcester, Mass., Base	5.80	7.65	8.25
Sharon, Pa. S3	5.80	7.65	8.25
Trenton, N.J. R5	7.95	8.55	10.50
Wallingford, Conn. W2	6.30	7.60	8.20
Warren, O. T5	6.20	7.65	8.25
Weirton, W.Va. W6	5.80	7.65	8.25
Worcester, Mass. A7	5.40	7.60	8.55
Worcester, Mass. T6	5.95	7.60	8.55
Youngstown C8	7.65	8.25	10.20

Spring Steel (Tempered)

N.Y. R. (23)	10.30	12.50	15.50
Harrison, N.J. C18	10.30	12.50	15.50
New York Y3	10.30*	12.50*	15.50*
Youngstown C8	10.30	12.50	15.50

* Plus \$1.575 per 100 lb.

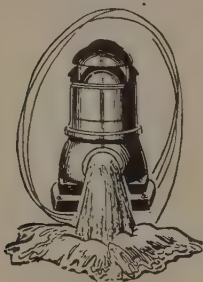
Key to Producers

A1 Acme Steel Co.	C10 Colorado Fuel & Iron	G2 Globe Iron Co.
A3 Alcan. Wood Steel Co.	C11 Columbia-Geneva Steel	G3 Globe Steel Tube Co.
A4 Allegheny Ludlum Steel	C12 Columbia Steel & Shaft	G4 Granite City Steel Co.
A7 American Steel & Wire	C13 Columbia Tool Steel Co.	G5 Great Lakes Steel Co.
A8 Anchor Drawn Steel Co.	C14 Compressed Steel Shaft	G6 Greer Steel Co.
A9 Angell Nail & Chaplet	C16 Continental Steel Corp.	H1 Hanna Furnace
A10 Armco Steel Corp.	C17 Copperwell Steel Corp.	I-1 Igoe Bros. Inc.
A11 Atlantic Steel Co.	C18 Crucible Steel Co.	I-2 Inland Steel Co.
A13 American Cladmetals Co.	C19 Cumberland Steel Co.	I-3 Interlake Iron Works
B1 Babcock & Wilcox Co.	C20 Cuyahoga Steel & Wire	I-4 Ingersoll Steel Works
B2 Bethlehem Steel Co.	C22 Clamont Steel Corp.	Borg-Warner Co.
B3 Beth. Pac. Coast Steel	D2 Detroit Steel Corp.	I-7 Indiana Steel & Iron
B4 Blair Strip Steel Co.	D3 Detroit Tube & Steel	J1 Jackson Iron & Steel
B5 Bliss & Laughlin Inc.	D4 Disston & Sons, Henry	J3 Jessop Steel Co.
B6 Bloopfield Steel Corp.	D6 Driver Harris Co.	J4 Johnson Steel & Iron
B8 Breauburn Alloy Steel	D7 Dickson Weatherproof	J5 Jones & Laughlin
B11 Buffalo Bolt Co.	Nail Co.	J6 Joslyn Mfg. & Supply
B12 Buffalo Steel Div.	E1 Eastern Gas & Fuel Assoc.	J7 Judson Steel Co.
H. K. Porter Co.	E2 Eastern Stainless Steel	J8 Jersey Shore Steel
B14 A. M. Byers Co.	E4 Electro Metallurgical Co.	K1 Kaiser Steel Co.
C1 Calstrip Steel Corp.	E5 Elliott Bros. Steel Co.	K2 Keokuk Electro
C2 Calumet Steel Div.	E6 Empire Steel Corp.	K3 Keystone Drawn
Borg-Warner Corp.	F2 First Sterling Inc.	K4 Keystone Steel
C4 Carpenter Steel Co.	F3 Fitzmaurice Steel Co.	L1 Lackade Steel Co.
C5 Central Iron & Steel Div.	F4 Follansbee Steel Corp.	L2 Lackawanna Steel
Barium Steel Corp.	F5 Franklin Steel Div.	L3 Labadie Steel
C7 Cleve. Cold Rolling Mills	Borg-Warner Corp.	L4 Lockhart Iron & Steel
C8 Cold Metal Products Co.	F6 Fretz-Moon Tube Co.	L6 Lone Star Steel
C9 Colonial Steel Co.	F7 Ft. Howard Steel & Wire	L7 Lukens Steel Co.

Merchant Quality		An'd. Galv.		So. Chicago, Ill. R2		Duluth, Minn. A7		Joliet, Ill. A7		So. Chicago, Ill. R2		To dealers & mfrs. (7) Col.	
(gauge)		An'd. Galv.		So. San Francisco C10		Johnstown, Pa. B2		Kansas City, Mo. S5		Kokomo, Ind. C16		Fairfield, Ala. T2	
ga City R2.. 6.075-6.325		An'd. Galv.		SparrowsPoint, Md. B2.. 5.325		Los Angeles B3.. 7.225		Kokomo, Ind. C16		Minnequa, Colo. C10		Pittsburgh, Pa. P7	
ga J5 .. 6.075-6.525		An'd. Galv.		Sterling, Ill. (1) N15 .. 5.325		Minnequa, Colo. C10 .. 6.525		Minnequa, Colo. C10		Donora, Pa. A7		Fairfield, Ala. T2	
A11 .. 6.325-6.675		An'd. Galv.		Struthers, O. Y1 .. 5.225		Massena, Pa. P7 .. 6.275		Massena, Pa. P7		Pittsburgh, Calif. C11		Rankin, Pa. A7	
ville (19) K4. 6.075-6.40		An'd. Galv.		Torrance, Calif. C11 .. 6.175		Monessen, Pa. P16 (42) .. 7.240		Pittsburgh, Calif. C11		Rankin, Pa. A7		Joliet, Ill. A7	
C W12 .. 6.075-6.225		An'd. Galv.		Waukegan, Ill. A7 .. 5.225		New Haven, Conn. A7 .. 6.575		So. Chicago, Ill. R2		So. San Fran., Calif. C10.167		Joliet, Ill. A7	
rdville M8. 6.075-6.225		An'd. Galv.		Worcester, Mass. A7 .. 5.525		Palmer, Mass. W12 .. 6.575		SparrowsPoint, Md. B2.. 149		SparrowsPoint, Md. B2.. 149		Joliet, Ill. A7	
P. A7 .. 6.075-6.225		An'd. Galv.		WIRE, Cold-Rolled Flat		Pittsburg, Calif. C11 .. 7.225		Sterling, Ill. (1) N15 .. 146		*Based on 14c zinc; \$17.5c zinc		Joliet, Ill. A7	
Minn. A7 .. 6.075-6.225		An'd. Galv.		Anderson, Ind. G6 .. 6.20		Pittsburg, Calif. C11 .. 7.225		Portsmouth, O. P12 .. 6.275		BALE TIES, Single Loop		Col.	
nd T2 .. 6.075-6.225		An'd. Galv.		Buffalo W12 (43) .. 6.35		Roebeling, N.J. R5 .. 6.575		So. Chicago, Ill. R2 .. 6.275		Atlanta A11		Joliet, Ill. A7	
n Tex. S5 .. 6.475-6.625		An'd. Galv.		Cleveland A7 (43) .. 5.85		So. Chicago, Ill. R2 .. 6.275		Monessen, Pa. P7 .. 6.275		Atlanta A11		Joliet, Ill. A7	
own B2 .. 6.075-6.457		An'd. Galv.		Crawf'sville, Ind. M8 (43) 5.85		Monessen, Pa. P7 .. 6.275		Buffalo W12 (43) .. 8.90		Atlanta A11		Joliet, Ill. A7	
ll A7 .. 6.075-6.225		An'd. Galv.		Dover, O. G6 .. 6.20		Torrance, Calif. C11 .. 7.225		Crawf'sville, Ind. M8 (43) 8.90		Atlanta A11		Joliet, Ill. A7	
A7 .. 6.075-6.825		An'd. Galv.		Kokomo, Ind. C16 (43) .. 6.00		Trenton, N.J. A7 .. 6.575		Trenton, N.J. A7 .. 6.575		Atlanta A11		Joliet, Ill. A7	
C16 .. 6.175-6.425		An'd. Galv.		Franklin Park, Ill. T6 (43) 6.20		Waukegan, Ill. A7 .. 6.275		Atlanta A11		Kokomo, Ind. C16		Joliet, Ill. A7	
geles B3 .. 7.025 .. 6.225		An'd. Galv.		Massillon, O. R8 (43) .. 5.85		WIRE, Fine & Weaving (8" Coils)		Atlanta A11		Minnequa, Colo. C10 (45) 123		Joliet, Ill. A7	
ua P10 .. 6.325-6.70		An'd. Galv.		Monessen, Pa. P16 (43) .. 6.35		Alton, Ill. L1 (43) .. 9.20		Atlanta A11		Fairfield, Ala. T2		Joliet, Ill. A7	
en P7 .. 6.075-6.45		An'd. Galv.		Monessen, Pa. P7 (43) .. 6.10		Buffalo W12 (43) .. 8.90		Atlanta A11		Joliet, Ill. A7		Joliet, Ill. A7	
C W12 .. 5.525 .. 6.225		An'd. Galv.		Pawtucket, R.I. (12) N8 (43) 6.85		Cleveland A7 (43) .. 8.90		Atlanta A11		Kokomo, Ind. C16		Joliet, Ill. A7	
Calif. C11. 7.025-7.175		An'd. Galv.		Trenton, N.J. R5 (43) .. 6.15		Crawf'sville, Ind. M8 (43) 8.90		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
ll (18) P12 .. 6.475 .. 6.225		An'd. Galv.		Portsmouth, O. P12 (43) 6.15		Donora, Pa. A7 .. 133		Atlanta A11		Portsmouth, O. P12		Joliet, Ill. A7	
A7 .. 6.075-6.225		An'd. Galv.		Worcester, Mass. T6 (43) 6.50		Houston, Tex. S5 .. 141		Atlanta A11		So. Chicago, Ill. R2		Joliet, Ill. A7	
ago R2 .. 6.075-6.325		An'd. Galv.		Worcester, Mass. W12 (43) 6.65		Johnstown, Pa. B2 .. 138		Atlanta A11		SparrowsPoint, Md. B2		Joliet, Ill. A7	
ran C10 .. 7.025-7.40		An'd. Galv.		WIRE, Galv'd ACSR for Cores		Postoria, O. S1 (43) .. 8.90		Atlanta A11		Sterling, Ill. (1) N15		Joliet, Ill. A7	
rwsP2 .. 6.175-6.557		An'd. Galv.		Bartonsville, Ill. K4 .. 8.90		Johnstown, Pa. B2 (43) .. 8.90		Atlanta A11		Worcester, Mass. A7		Joliet, Ill. A7	
G, Ill. (1) N15 6.075-6.425		An'd. Galv.		Monessen, Pa. P16 (43) .. 8.50		Kokomo, Ind. C16 (43) .. 8.90		Atlanta A11		WIRE, Ties, Single Loop		Joliet, Ill. A7	
ers, O. A7 .. 6.075-6.475		An'd. Galv.		Muncie, Ind. I-7 (43) .. 8.70		Monessen, Pa. P16 (43) .. 8.90		Atlanta A11		Col.		Joliet, Ill. A7	
ous, Cal. C11 7.025 .. 6.225		An'd. Galv.		Roebeling, N.J. R5 (43) .. 8.80		Muncie, Ind. I-7 (43) .. 8.10		Atlanta A11		Alabama City, Ala. R2		Joliet, Ill. A7	
ster A7 .. 6.375-6.525		An'd. Galv.		SparrowsPt., Md. B2 (43) 8.80		Palmer, Mass. W12 (43) 9.20		Atlanta A11		Albuquerque, N.M. S5		Joliet, Ill. A7	
		An'd. Galv.		Johnstown, Pa. B2 (43) .. 8.50		Roebeling, N.J. R5 (43) 9.20		Atlanta A11		Atlanta A11		Joliet, Ill. A7	
		An'd. Galv.		WIRE, Cold-Rolled Flat		Waukegan, Ill. A7 (43) .. 8.90		Atlanta A11		Bartonsville, Ill. (19) K4		Joliet, Ill. A7	
		An'd. Galv.		Alton, Ill. L1 (43) .. 9.15		Worcester, Mass. A7, T6 (43) 9.20		Atlanta A11		Crawfordsville, Ind. M8		Joliet, Ill. A7	
		An'd. Galv.		Bartonsville, Ill. K4 .. 8.95		WIRE, Tie Band		Atlanta A11		Donora, Pa. A7		Joliet, Ill. A7	
		An'd. Galv.		Buffalo W12 (43) .. 8.55		Bartonsville, Ill. K4 .. 11.51		Atlanta A11		Houston, Tex. S5		Joliet, Ill. A7	
		An'd. Galv.		Postoria, O. S1 (43) .. 8.55		Fairfield, Ala. T2 (43) .. 11.40		Atlanta A11		Johnstown, Pa. B2		Joliet, Ill. A7	
		An'd. Galv.		Johnstown, Pa. B2 (43) .. 8.55		Roebeling, N.J. R5 (43) .. 11.55		Atlanta A11		Joliet, Ill. A7		Joliet, Ill. A7	
		An'd. Galv.		Monessen, Pa. P16 (43) .. 8.55		WOVEN FENCE, 9-15", Ga. Col.		Atlanta A11		Kokomo, Ind. C16		Joliet, Ill. A7	
		An'd. Galv.		Monessen, Pa. P7 (43) .. 8.80		Alabama City, Ala. R2 .. 135		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Muncie, Ind. I-7 (43) .. 8.75		Ala. City, Ala. T7-18ga. R2 222		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Palmer, Mass. W12 (43) .. 8.85		Alquippa, Pa. 9-14", ga. J5 139t		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Portsmouth, O. P12 (43) .. 8.55		Atlanta A11		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Roebeling, N.J. R5 (43) .. 8.35		Bartonsville, Ill. (19) K4 .. 137		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		SparrowsPt., Md. B2 (43) .. 8.65		Crawfordsville, Ind. M8 .. 139		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Struthers, O. Y1 (43) .. 8.55		Donora, Pa. A7 .. 133		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Worcester J4, T6 (43) .. 8.85		Duluth, Minn. A7 .. 133		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		(A) Plow and Mild Plow;		Fairfield, Ala. T2 .. 133		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		add 0.25c for improved plow.		Houston, Tex. S5 .. 141		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		WIRE, MB Spring, High Carbon		Johnstown, Pa. B2 .. 138		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Albuquerque, N.M. S5 (43) .. 6.25		Joliet, Ill. A7 .. 133		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Alton, Ill. L1 (43) .. 6.55		Kansas City, Mo. S5 .. 145		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Buffalo W12 (43) .. 6.25		Kokomo, Ind. C16 .. 140		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Cleveland A7 (43) .. 6.25		Minnequa, Colo. C10 .. 146*		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Donora, Pa. A7 (43) .. 6.25		Monessen, Pa. P7 .. 138		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Duluth, Minn. A7 (43) .. 6.25		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Postoria, O. S1 (43) .. 6.25		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Johnstown, Pa. B2 (43) .. 6.25		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Millbury (12) N6 (43) .. 8.05		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Minnequa, Colo. C10 (43) 6.50		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Monessen, Pa. P7 (43) .. 6.25		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Monessen, Pa. P16 .. 6.25		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Muncie, Ind. I-7 (43) .. 6.45		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Palmer, Mass. W12 (43) .. 6.55		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Pittsburg, Calif. C11 (43) 7.20		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Roebeling, N.J. R5 (43) .. 6.55		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Portsmouth, O. P12 (43) 6.25		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		So. Chicago, Ill. R2 (43) .. 6.25		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		So. San Fran. C10 (43) .. 7.20		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		SparrowsPt., Md. B2 (43) 6.35		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Struthers, O. Y1 (43) .. 6.25		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Trenton, N.J. A7 (43) .. 6.25		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Waukegan, Ill. A7 (43) .. 6.55		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Worcester A7 .. 6.55		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Worcester, Mass. W12 (43) 6.55		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Worcester, Mass. J4 .. 6.55		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		WIRE, Upholstery Spring		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Albuquerque, Pa. J5 .. 6.275		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Alton, Ill. L1 .. 6.50		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Buffalo W12 .. 6.275		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Cleveland A7 .. 6.275		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		Donora, Pa. A7 .. 6.275		Pittsburg, Calif. C11 .. 156		Atlanta A11		Minnequa, Colo. C10		Joliet, Ill. A7	
		An'd. Galv.		P13 Precision Drawn Steel		T2 Tenn. Coal & Iron Div.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		P14 Pitts. Screw & Bolt Co.		T3 Tenn. Prod. & Chem.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		P15 Pittsburgh Metallurgical		T4 Texas Steel Co.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		P16 Page Steel & Wire Div.,		T5 Thomas Strip Division,		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		Amer. Chain & Cable		Pittsburgh Steel Co.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		P17 Plymouth Steel Co.		T6 Thompson Wire Co.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		R1 Reeves Steel & Mfg. Co.		T7 Timken Roller Bearing		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		R2 Republic Steel Corp.		T8 Tonawanda Steel Div.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		R3 Rhode Island Steel Corp.		T9 Union Carb. & Stan. San.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		R5 Roebeling's Sons, John A.		U4 Universal Cyclops Steel		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		R6 Rome Strip Steel Corp.		U5 United States Steel Corp.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		R7 Rotary Electric Steel Corp.		V2 Vanadium-Alloys Steel		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		R8 RelianceDiv., EatonMfg.		V3 Vulcan Crucible Steel Co.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		S1 Seneca Wire & Mfg. Co.		W1 Wallace Barnes Co.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		S3 Sharon Steel Corp.		W2 Wallingford Steel Co.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		S5 Sheffield Steel Corp.		W3 Washburn Wire Co.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		S7 Sheffango Furnace Co.		W4 Washington Steel Corp.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		S8 Simmons Co.		W5 Weir Steel & Mfg. Co.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		S9 Simmons Saw & Steel Co.		W7 W. Va. Steel & Mfg. Co.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		S9 Sloss-Sheffield S.&I. Div.		W8 West. Auto. Mach. Screw		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		S13 Standard Forgings Corp.		W9 Wheatland Tube Co.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		S14 Standard Tube Co.		W10 Wheeling Steel Corp.		Joliet, Ill. A7		To dealers & mfrs. (7) Col.		Joliet, Ill. A7	
		An'd. Galv.		S15 Stanley Works		W12 Wickwire Spencer Steel							

WATER

for Atlantic
City's
RITZ-CARLTON



DATA:

—WELL; Drilled by rotary clay-seal process, 850 feet deep in the Kirkwood stratum; double cased and graveled.

—CASING; 145 feet of 16" and 747 feet of 12" steel.

—SCREEN; 61 feet of 6-gauge Armco Iron.

—PUMPS; Originally equipped with 4-stage 15" bowls with cast iron impellers. Later replaced with 5-stage 12" bowl and bronze impeller.

—MOTOR; Original 25 HP electric still giving good service.

Layne

There are Layne Associate Companies located throughout the country. The one near you already understands the drilling and water bearing formations in your area.



ON ATLANTIC CITY's famous board walk, stands one of America's loveliest hotels—the Ritz-Carlton. Twenty-eight years ago the owners turned to Layne for a well and pump installation. In the intervening years—over a quarter century, they have never experienced one fraction of disappointment in the dependability, durability and ever faithful performance of their purchase.

In the twenty-eight years of almost constant operation, the Layne unit has produced more than 1,471,680,000 gallons of water—all the fresh water needed by this great hotel. Upkeep expense since the day installed has averaged less than a hundred and seventy dollars a year. One amazing fact is that the original Armco iron screen is still functioning. Another is that the well was installed by a method that completely sealed off all infiltration of salt water in a particularly difficult salt water area. Such is the life expectancy, satisfactory operation and generally low upkeep expense of Layne wells and pumps.

For Water Well and Pump Catalogs, write to

LAYNE & BOWLER, INC.

GENERAL OFFICES, MEMPHIS 8, TENN.

WATER WELLS

VERTICAL TURBINE PUMPS

WATER TREATMENT

WELD STANDARD PIPE, T & C Carload discounts from list, %

Inches	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Per Ft.	8.5c	11.5c	17c	23c	28c	35c	42c	50c	58.5c	76.5c
Per Ft.	0.85	1.13	1.68	2.28	2.88	3.68	4.48	5.28	6.08	7.88
	Bilk	Galv	Bilk	Galv	Bilk	Galv	Bilk	Galv	Bilk	Galv
ppa, Pa. J5 (†)	32.5	15.25	35.5	18.25	38	20.75	38.5	20.5	39	21
Ill. L1 (†)	29.5	10.5	32.5	14.5	35	18	35.5	18.5	36	19.5
od, W. Va. W10	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	21.5
Pa. N2 (†)	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	22.25
ia, Calif. K1 (†)	31.5	14.25	34.5	18.25	37	21.75	37.5	21	38	22
arbor, Ind. Y1 (†)	32.5	14.25	35.5	18.25	38	20.75	38.5	20.5	39	22.25
O. N3 (*)	32.5	14.25	35.5	18.25	38	20.75	38.5	20.5	39	22.25
Pa. M6	32.5	14.25	35.5	18.25	38	20.75	38.5	20.5	39	22.25
ws Pt., Md. B2	30.5	11.25	33.5	15.25	36	18.75	36.5	18.5	37	19.5
stown R2 (**)	32.5	14.25	35.5	18.25	38	20.75	38.5	20.5	39	22.25
stown Y1 (†)	32.5	15.25	35.5	19.25	38	22.75	38.5	22.00	39	23.00
land, Pa. W9	32.5	13.25	35.5	16.25	38	18.75	38.5	19	39	19.5

LESS STANDARD PIPE, T & C Carload discounts from list, %

Inches	2	2 1/2	3	3 1/2	4	5	6
Per Ft.	37c	58.5c	76.5c	92c	\$1.09	\$1.48	\$1.92
Per Ft.	3.68	5.82	7.62	9.20	10.89	14.81	19.18
	Bilk	Galv	Bilk	Galv	Bilk	Galv	Bilk
ppa, Pa. J5 (†)	24	6	27	8.25	27	8.25	29
age, Pa. N2.	24	6	27	8.25	27	8.25	29
1, O. N3 (*)	24	12.75	27	12.75	27	12.75	29
stown Y1 (†)	24	7.50	27	9.25	27	9.25	29

TRIC WELD STANDARD PIPE, T & C

stown, R2 (**)	24	6.75	27	8.75	27	8.75	29	10.75	29	10.75	33.75	15.5	33.75	15.5
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WELD STANDARD PIPE, T & C Carload discounts from list, %

Inches	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Per Ft.	5.5c	6c	6c	6c	6c	6c	6c	6c	6c	6c
Per Ft.	0.24	0.42	0.57	0.62	0.62	0.62	0.62	0.62	0.62	0.62
	Bilk	Galv	Bilk	Galv	Bilk	Galv	Bilk	Galv	Bilk	Galv
od, W. Va. W10	29.5	+0.25	23.25	+3.5	17.75	+7.75	33	14.25	33	14.25
Pa. P6 (†)	30.5	1.25	25	+1.75	20	+5.5	33	14.25	33	14.25
Pa. N2 (†)	30.5	1.25	25	+1.75	20	+5.5	33	14.25	33	14.25
Pa. M6 (†)	29.5	+0.25	23	+4.25	18	+8.25	33	14.25	33	14.25
ows Pt., Md. B2	28.5	+0.75	23	+3.75	18	+7.50	33	14.75	33	14.75
stown R2 (**)	28.5	+0.75	23	+3.75	18	+7.50	33	14.75	33	14.75
land, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50	33	14.75	33	14.75

alized pipe discounts based on zinc price of: (†), 14c; (‡), 12.50c; (\$), 14.50c; (*), 15c; (**) discounts adjusted depending on price of zinc at time of shipment; (**), 13c.

BOILER TUBES

base c.l. prices, dollars per 100 ft., mill; minimum thickness, cut lengths 10 to 24 ft., inclusive.

B.W.	Seamless	Elec. Weld
Gage	H.R.	C.D.
13	14.19	16.71-17.77
13	16.97	19.80-21.26
13	18.22-18.77	22.02-22.82
13	20.35-21.35	24.92-25.49
13	22.81-23.93	27.94-28.58
13	25.69-26.66	31.38-32.18
13	28.40-29.36	34.94-35.58
12	31.28-32.17	37.83-39.19
12	33.87-34.82	40.09-42.44
12	35.78-36.87	42.11-44.93

TS, NUTS

TS, MACHINE BOLTS
b. midwestern plants;
ent off list for less than
lots to consumers)
and shorter:
1 in. & smaller diam. 15
1 in. & larger 18.5
er than 6 in.: 17.5
diam.: 14
bolts, all diam.: 15
in. and shorter 23
er 6 in. long 21
ed Necked Carriage 18.5
Bolts 34
Elevator, Tap and
Shoe 21
Bolts 21
r & Flitting-Up Bolts 31

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)
1 in. diam x 6 in. and
shorter 38
1 in. and smaller diam.
x over 6 in. 26

HEADLESS SET SCREWS

(Packaged; per cent off list)
No. 10 and smaller 35
1/4 in. diam. & larger 16
N.F. thread, all diam.: 10

STEEL STOVE BOLTS

(F.o.b. plant, per cent off
list in packages)
Plain finish 48 & 10
Plated finishes 81 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per
cent off list)
6 in. or shorter:
1/4 in. & smaller 42
1/2 in. through 1 in. 34
Longer than 1 in. 26
1/4 in. and smaller 26
1/2 in. through 1 in. 24

RIVETS

F.o.b. midwestern plants
Structural 1/4 in., larger 7.85c
1/4 in. under 36 off

ELECTRODES

(Threaded, with nipples, un-
boxed f.o.b. plant)

GRAPHITE

Inches Cents
Diam. Length
17, 18, 20 60, 72 17.85
8 to 16 48, 60, 72 17.85
Reg. Hyv. 7 48, 60 19.57
35 48, 60 20.95

CARBON

Light 8.03
24 8.03
72 to 104 8.03
34, 90 8.03

METALLURGICAL COKE

Price net ton

BEEHIVE OVENS
Connellsvil.fur \$14.50-15.00
Connellsvil.fur .16.50-17.50
New River foundry 20.80
Wise county, foundry 15.95
Wise county, furnace 15.20

OVEN FOUNDRY COKE

Kearney, N. J.ovens \$24.00
Everett, Mass.ovens 26.00
New England, del. 26.05
Chicagoovens 24.50
Chicago, del. 26.00
Terre Haute,ovens 24.05
Milwaukee,ovens 25.25
Indianapolis,ovens 24.25
Cincinnati, del. 25.85
Painesville, O.ovens 25.50
Cleveland, del. 27.43
Erie, Pa.ovens 25.00
Birmingham,ovens 21.85
Cincinnati, del. 25.58
Indianapolis, Tex.ovens 18.50
Philadelphia,ovens 23.95
Swedeland, Pa.ovens 23.85
St. Louis,ovens 26.00
St. Louis, del. 26.00
Portsmouth, O.ovens 24.00
Cincinnati, del. 26.62
Detroit,ovens 25.50
Buffalo, del. 26.50
Flint, del. 28.23
Pontiac, del. 27.06
Saginaw, del. 28.58
*Or within \$4.55 freight zone from works.

COAL, CHEMICALS

Spot, cents per gallon,ovens
Pure benzol 30.00-35.00
Toluol, one deg. 30.00-33.00
Industrial xylol 30.00-35.00
Sulphate of ammonia \$40-45
Cents per pound,ovens
Phenol, 40 (carlots, non- returnable drums) 17.25

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF ₂ content 70%, \$43; 60%, \$40.
Imported, net ton, duty paid, metallurgical grade, \$33-\$35.

NOTE: Current prices on
clad steels appeared on page
103, Jan. 12 issue.

STAINLESS STEEL

(Add 4.7% on base price and
extras)

Type	Sheets	C.R.	Wire
	Struct.	Strip	Struct.
301...	41.00	34.00	31.25
302...	41.25	36.75	31.50
303...	43.25	40.25	34.00
304...	43.25	35.75	33.00
309...	56.00	55.00	44.75
316...	57.00	59.00	49.25
321...	49.25	48.25	37.00
347...	53.75	52.25	41.50
410...	36.50	30.50	25.75
416...	37.00	30.00	26.25
420...	44.00	42.00	31.25
430...	39.00	31.00	26.25
501...	27.50	28.00	14.25
502...	28.50	27.00	15.25

Balt., Types 301-347 and 430
sheets, except 303 and 309
E2.
Brackenridge, Pa. sheets A4
quotes slight variations on
Types 301-347.

Bridgeville, Pa., bars, wire,
sheets & strip U4.
Butler, Pa. sheets and strip
except Types 302, 309, 416,
420, 501 & 502, A10.
Carnegie, Pa., sheets and
strip except Types 303,
416, 501 & 502 S18.
Cleveland, strip A7.
Detroit, strip M1 quotes
34.00c on Type 301; 38.50c,
302, 38.50c, 304; 38.50c,
316, 52.00c, 347; 30.50c,
410; 61.00c, 430.

Dunkirk, N. Y., bars, wire
A4 quotes slight variations
on Types 301-347.

Duquesne, Pa., bars U5.
Fort Wayne, Ind., bars and
wire, except Types 501 &
502 J6 quotes slight variations
on Types 301-347.

Gary, Ind., sheets except
Type 416 U5.
Harrison, N. J., strip and
wire C18.

Massillon, O., all items, R2.
McKeesport, Pa., strip, Type
410; bars & wire, Types
410 through 430 and 31.25c
on Type 302, 37.75c on
303, 32.75c on 304, 48.75c
on 316, 36.75c on 321,
41.25c on 347 F2.

McKeesport, Pa., bars, sheets
except Type 416 U5.
Middletown, O., sheets and
strip except Types 303, 416,
420, 501 and 502 A10.

Midland, sheets & strip C18.
Munhall, Pa., bars U5.
Muncie, Ind., wire I-7 quotes
types 302, 304, 430.

Pittsburgh, sheets C18.
Reading, Pa., strip except
34.25c on Type 301 and
56.00c on 309; bars, except
31.50c on Type 301 and
45.25c on 309 C4.

Sharon, Pa., strip, except
Types 303, 309, 416, 501,
502.

502 and 34.25c on Type
301 S3.

So. Chicago, Ill., bars &
structural U5.

Syracuse, N. Y., bars, wire
& structural C18.

Titusville, Pa., bars U4.
Wallingford, Conn., strip W2
quotes 0.25c higher.

Washington, Pa., bars, sheets
& strip, except 0.25c higher
on Type 301 J3.

Washington, Pa., Types 301
through 347 sheets & strip
except 303, 309; 316 sheets
62.00c, strip 64.00c W4.

Watervliet, N. Y., structural
& bars A4 quotes variations
on Types 301-347.

Waukegan, bars & wire A7
West Leechburg, Pa., strip,
A4 quotes slight variations
on Types 301-347.

Youngstown, strip except
Types 303, 309, 316, 416,
501 and 502 and 34.25c on
Type 301 C8.

METAL POWDERS

(Per pound, f.o.b. shipping
point in ton lots for minus
100 mesh, except as other-
wise noted)

Sponge iron:		Cents
98+ % Fe, annealed		18.00
Unannealed	.....	14.50
Swedish, c.l.f. N. Y.,		
c.l., in bags	.....	10.90

Electrolytic iron:
Annealed, 99.5% Fe. 42.50
Unannealed (99+ %
Fe) 36.50
Unannealed (99+ %
Fe) (minus 325
mesh) 53.50

Powder Flakes 48.50
Carbonyl Iron:
97.9-99.8% size 5 to
10 microns .83.00-148.00

Aluminum:
Carlots, freight
allowed 31.00
Atomized, 500 lb
drums, freight
allowed 33.00

Antimony, 500 lb lots. 71.00
Brass, 20-ton lots. 31.00-34.25
Bronze, 10-ton
lots 51.25-60.00
Phosphor-Copper, 20-
ton lots 50.00

Copper:
Electrolytic 37.25
Reduced 35.25
Lead 7.50
Magnesium 75.00-85.00

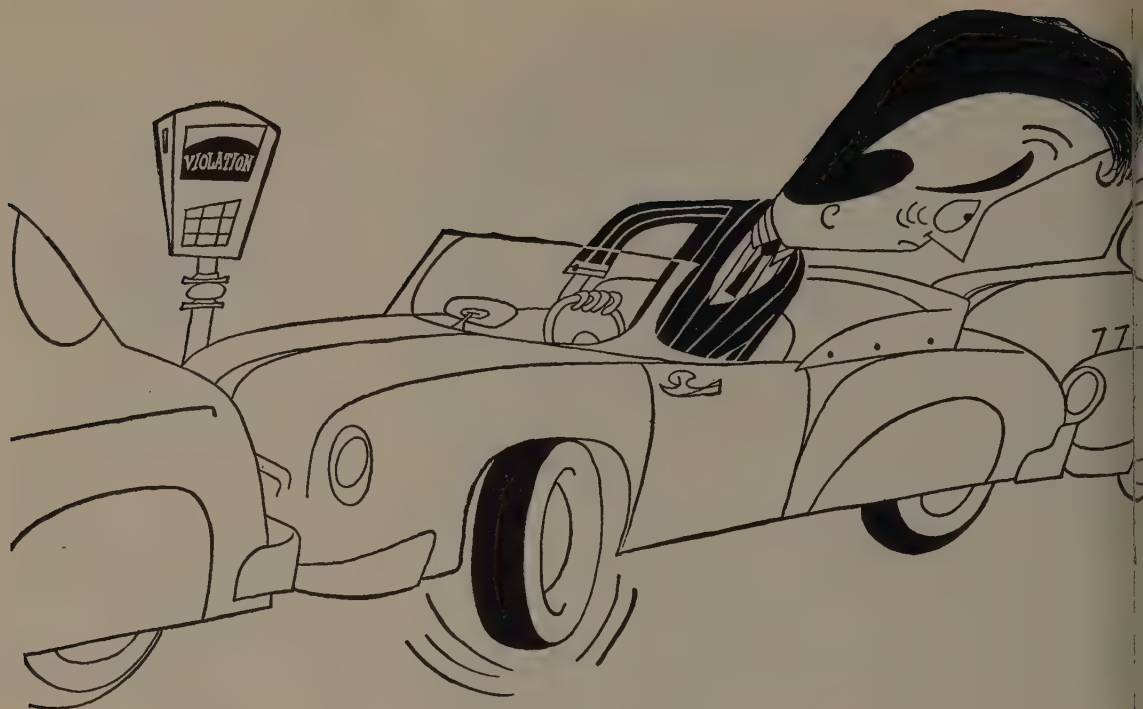
Manganese:
Minus 100 mesh 57.00
Minus 35 mesh 52.00
Minus 200 mesh 62.00
Nickel unannealed 86.00

Nickel-Silver 5-ton lots 46.00
Silicon 38.50
Soldier 8.50
Stainless Steel, 302 83.00
Zinc, 10-ton lots. 13.00-31.00
Tungsten Dollars

Melting grade, 99%
60 to 200 mesh:
1000 lb and over 5.85
Less than 1000 lb 6.00

Molybdenum:
99.9%, minus 200
mesh 3.24
Chromium, electrolytic
99% Cr min. 3.50

* Plus cost of metal.



when you're stuck for specialty steel

Scores of specialty steel users have found that Crucible is a first-rate way to avoid supply tie-ups.

Considering industry shortages, our warehouses are carrying remarkably full stocks of special-purpose steels—including complete stocks of tool steel. Moreover, our warehouses are located so strategically there's bound to be one with a quick shipping time of you.

So, next time you're tied up for special steels, call us. Your nearby Crucible warehouse can supply you.

Stocks maintained of:

Rex High Speed Steel . . . ALL grades of Tool Steel (including Die Casting and Plastic Die Steel, Drill Rod, Tool Bits and Hollow Drill Steel) . . . Stainless Steel (Sheets, Bars, V-Billets, Electrodes) . . . AISI Alloy, Max-el Machinery, Co. Spring and Special Purpose Steels

CRUCIBLE

first name in special purpose steels

52 years of *Fine* steelmaking

WAREHOUSE SERVICE

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

Branch Offices and Warehouses: ATLANTA • BALTIMORE • BOSTON • BUFFALO • CHARLOTTE • CHICAGO • CINCINNATI • CLEVELAND • DENVER • DETROIT • HOUSTON • INDIANAPOLIS • LOS ANGELES • MILWAUKEE • NEWARK • NEW HAVEN • NEW YORK • PHILADELPHIA • PITTSBURGH • PROVIDENCE • ROCKFORD • SAN FRANCISCO • SEATTLE • SPRINGFIELD, MASS. • ST. LOUIS • ST. PAUL • SYRACUSE • TORONTO, ONT. • WASHINGTON

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound for delivery within switching limits, subject to extras.)

	SHEETS			STRIP		BARS		Standard Structural Shapes		PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140††		Carbon	Floor
ark (city)	6.56	7.57	8.72	6.86	...	6.89	7.83‡	11.34	6.69	6.90	8.31
ity (city)	6.35	7.27	8.47	6.75	...	6.59	7.53	9.54	6.39	6.60	8.01
(city)	6.71	7.56	8.74	6.75	...	6.62	7.69‡	11.38	6.76	6.95	8.18
(city)	6.51	7.36	8.54	6.55	...	6.42	7.49‡	11.18	6.56	6.75	7.98
(city) ...	6.36	7.38	8.55	6.70	8.55	6.67	7.70‡	11.04	6.42	6.49	7.62
(city) ...	6.11	7.13	8.30	6.45	8.30	6.42	7.45‡	10.79	6.17	6.24	7.36
(city) ...	6.01	7.37	8.57	6.62	...	6.61	7.62‡	11.37	6.67	6.67	7.90
(city) ...	5.81	7.17	8.37	6.42	...	6.41	7.42‡	11.17	6.47	6.47	7.70
a, Va. ...	7.60	...	...	...	...	6.44	8.45	...	7.25	6.64	7.33
nd, Va. ...	6.14	6.95	8.68	6.53	...	6.30	7.38	...	6.58	6.68	7.80
(w'hse) ...	6.31	7.61	8.90	6.59	...	6.90	7.78	...	6.93	6.95	8.17
(w'hse) ...	6.00	6.85	8.61	6.41	...	6.10	7.15‡	11.27	6.28	6.50	7.87
(del.) ...	5.80	6.65	8.41	6.21	...	5.90	6.95‡	11.07	6.08	6.30	7.67
(w'hse) ...	5.80	6.65	8.00	5.94	...	5.53	6.90‡	10.65	5.95	5.95	7.18
(w'hse) ...	6.07	6.92	8.64	6.13	7.70-8.03	6.12	7.10‡	10.92	6.42	6.47	7.62
nd (del.) ...	6.00	6.85	8.34	6.20	...	6.09	7.10‡	10.99	6.48	6.32	7.71
(w'hse) ...	5.80	6.65	8.14	6.00	...	5.89	6.90‡	10.79	6.28	6.12	7.61
(city) ...	6.28	6.87	8.62	6.29	...	6.28	7.51‡	11.22	6.57	6.62	7.75
o (city) ...	6.00	6.85	8.20	6.03	...	6.03	7.00‡	10.85	6.15	6.15	7.38
o (w'hse) ...	5.80	6.65	8.00	5.83	...	5.83	6.80‡	10.65	5.95	5.95	7.18
1. (city) ...	6.17	7.02	8.37	6.20	...	6.20	7.27‡	11.02	6.32	6.32	7.55
1. (city) ...	5.97	6.82	8.17	6.00	...	6.00	7.07‡	10.82	6.12	6.12	7.35
uls (del.) ...	6.30	7.14	8.50	6.34	...	6.33	7.40‡	11.15	6.55	6.55	7.78
1 (w'hse) ...	6.10	6.94	8.00	6.14	...	6.13	7.20‡	10.95	6.35	6.35	7.58
um (city) ...	5.95	6.80	7.85‡	5.95	...	5.95	8.40	...	6.10	6.25	8.65
um (w'hse) ...	5.80	6.65	7.70‡	5.80	...	5.80	8.40	...	5.95	6.10	8.65
ng, (city) ...	6.80	8.65	9.80	6.95	11.40	6.80	8.80‡	12.25	6.80	6.85	9.90
(w'hse) ...	6.60	8.45	9.60	6.75	11.20	6.60	8.60‡	12.06	6.60	6.65	8.10
-Tacoma, ...	7.37	9.17	9.85	7.27	...	7.27	9.62‡	11.90‡	6.95	7.20	9.11
an (w'hse) ...	6.90	8.20	9.60	6.75	...	6.65	8.65‡	12.05	6.50	6.75	8.90

Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage excluded); ‡ includes 25-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-strip, 2000 lb and over; cold-finished bars, 2000 lb and over; —500 to 1499 lb; —450 to 1499 lb; —450 to 1499 lb; —450 to 1499 lb.

Ores

MANGANESE ALLOYS

Lake Superior Iron Ore

ton, 51% (natural), lower lake ports.	
ange bessemer	\$9.45
one nonbessemer	9.30
1 bessemer	9.20
1 nonbessemer	9.05
phosphorus	9.05
on adjustment for analysis, prices will be	
sed or decreased as the case may be for	
se or decreases after Dec. 1, 1950, in	
able lake vessel rates, upper lake rail	
its, dock handling charges and taxes	
m.	
Eastern Local Iron Ore	
Cents per unit del. E. Pa.	
ry and basic 56-62% concentrates	
tract	17.00
Foreign Iron Ore	
Cents per unit, c.i.f. Atlantic ports	
sh basic, 60 to 68%:	
t	nom.
g-term contract	24.00
1 African hematites (spot)	26.00-28.00
11an iron ore, 67-69% (spot)	32.00
Tungsten Ore	
Net ton unit, duty paid	
gn wolframite and scheelite, per	
ton unit	\$65.00
stic scheelite, mines	65.00

Manganese Ore

gane, 48% nearby, \$1.18-\$1.22 per long unit, c.i.f. U. S. ports, duty for buyer's unit; shipments against old contracts for ore are being received from some sources 5c-8c.

Chrome Ore

ton, f.o.b. cars, New York, Philadel-
Baltimore, Charleston, S. C., plus ocean
t differential for delivery to Portland,
or Tacoma, Wash.

Indian and African

2.81	\$39.00-\$42.00
3.1	44.00-45.00
no ratio	30.00-32.00

South African Transvaal

no ratio	\$27.00-\$28.00
no ratio	34.00-35.00

Brazilian

25:1 lump nom. |

Domestic

(Rail nearest seller) \$39.00 |

Molybdenum

hide concentrates per lb, molyb-
num content, mines \$1.00 |

Spiegeleisen: (19-21% Mn, 1-3% Si), Carlot per gross ton, \$85, Palmerton, Pa.; \$85, Pittsburgh and Chicago; (16% to 19% Mn) \$1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk \$225 per gross ton of alloy, c.i. packed \$237; gross ton lots, packed, \$252; less gross ton lots, packed \$269; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., Ashtabula, or Marietta, O. Base price: \$227, Johnstown, Pa.; \$225, Sheridan, Pa., Lynchburg, Va.; \$228, Etna, Pa.; \$226, Anacosta, Mont.

Shipment from Pacific Coast warehouses by one seller, add \$33 to above prices f.o.b. Los Angeles, Oakland, Portland, Ore. Shipment from Chicago warehouse, ton lots \$267; less gross ton lots, \$284, f.o.b. Chicago. Add or subtract \$2.80 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade:

(Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95¢ per lb of contained Mn, carload packed 28.7¢, ton lots 29.3¢, less ton lot. Delivered. Deduct 0.5¢ for max. 0.15% C grade from above prices, 1¢ for max. 0.30% C, 1.5¢ for max. 0.50% C, and 4.5¢ for max. 75% C—max 7% Si. Special Grade: (Mn 90% min, C 0.07% max, P 0.06% max). Add 0.5¢ to the above prices. Spot, add 0.25¢. Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35¢ per lb of contained Mn, carload packed 22.1¢, ton lot 23.2¢, less ton lot 24.4¢. Delivered. Spot, add 0.25¢.

Manganese metal, 2" x D (Mn 96% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2¢ per lb of metal; packed, 36.95¢; ton lot 38.45¢; less ton lots 40.45¢. Delivered. Spot, add 2¢.

Manganese, Electrolytic: 40,000 lb or more, 30¢; 2000 to 39,999 lb, 32¢; 250 to 1999 lb, 34¢. Premium for hydrogen-removed metal, 1.5¢ per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.4¢ per lb of alloy, carload packed, 12.15¢, ton lots 13.06¢, less ton lot 14.05¢. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2¢ from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5¢ from above prices. Spot, add 0.25¢.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, \$1.50 per lb of contained Ti; less ton \$1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton

lots \$1.35, less ton \$1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5¢.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract \$177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract, \$195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, \$4.90 per lb of contained Cb, less ton lot \$4.95. Delivered. Spot, add 10¢.

Ferrotantalum-Columbium: (Cb 40% approx. Ta 20% approx. and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, \$3.75 per lb of contained Cb plus Ta, delid.; less ton lots \$3.80.

Silicaz Alloy: (Si 35-40%, C 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45¢ per lb of alloy, ton lot 47¢, less ton lot 49¢. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, 1/2" x 12 M, 17.5¢ per lb of alloy, ton lots 18.25¢, less ton 19.5¢. Delid. Spot, add 0.25¢.

Graphitox No. 4: (Si 48-52%, C 5-7%, Ti 9-11%). C.I. packed, 18¢ per lb of alloy; ton lots 19¢; less ton lots 20.50¢, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.I. packed, 15¢ per lb of alloy; ton lots 16.50¢; less ton lots 17.75¢, f.o.b., Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al; bal. Fe) Lump, carload, bulk 14.50¢, packed 15.50¢; ton lots, packed, 15.75¢; less ton lots, packed, 16.25¢ per lb of alloy, delivered to destination within United States.

Ferrophosphorus: (23-25% based on 24% P content with unitage of \$3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., \$65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo f.o.b. Langeloth, \$1.32 in all sizes except powdered which is \$1.41; Washington, Pa. furnace, any quantity \$1.32.

Technical Molybde-Oxide: Per lb, contained Mo, f.o.b. Langeloth, Pa., \$1.14, in cans; in bags, \$1.13, f.o.b. Langeloth, Pa.; Washington, Pa., \$1.13.

Note: For current prices on chromium, silicon, vanadium, boron and tungsten alloys see page 105, Jan. 12 issue; calcium, strontium, brominated alloys and refractories, page 553, Jan. 5 issue.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 5, 1952.

STEELMAKING SCRAP
COMPOSITE

Jan. 15	\$43.00
Jan. 8	43.00
Dec., 1952	43.00
Jan., 1952	43.00
Jan., 1948	40.75

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

24. Heavy Turnings	1.00
25. Bricketted Turnings ..	Base
26. No. 1 Chemical Borings ..	3.00
27. No. 2 Chemical Borings ..	4.00
28. Wrought Iron	+10.00
29. Shading	+10.00
31. Old Tin & Tarn Plated Bundles	-10.00

Unprepared Grades

When compressed constitutes:	
32. No. 1 Bundles	- 6.00
33. No. 2 Bundles	- 9.00
34. Other than material suitable for hydraulic compression	- 8.00

Restrictions on Use

(1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer; otherwise ceiling prices shall not exceed prices established for grades 12 and 8, respectively.

(2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the case of Grade 27, for bricketted and direct charge into an electric furnace; otherwise ceiling prices shall not exceed price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth.

(4) Premiums for Grades 11-13, 20 and 21 may be charged only when sold for use in electric and acid open-hearth furnaces or foundries; or in basic O-H or blast furnace under NPA allocation or OFS authorization.

(5) Prices for Grade 29 may be charged only when sold for forging or rerolling purposes.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:

2. No. 2 Heavy Melting Steel	-\$2.00
3. No. 2 Steel Wheel	Base
4. Hollow Bored Axles and lost axles with keyways between the wheels	Base
5. No. 1 Bushing	- 3.50
6. No. 1 Turnings	- 3.00
7. No. 2 Turnings, Drillings & Borings	-12.00
8. No. 2 Cast Steel and uncut wheelcenters	- 6.00
9. Uncut Frogs, Switches	Base
10. Flues, Tubes & Pipes	- 8.00
11. Structural, Wrought Iron and/or/Steel, uncut	- 6.00
12. Destroyed Steel Cars	- 8.00
13. No. 1 Sheet Scrap	- 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00

Cut Rails:

16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
22. Bolsters & Side Frames:	Base
23. Cut	+ 3.00
24. Angles, Splice Bars & Tie Plates	+ 5.00
25. Solid Steel Axles	+12.00
26. Steel Wheels, No. 3, oversize	Base
27. Steel Wheels, No. 3	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles ..	+ 8.00
30. Wrought Iron	+ 8.00
31. Fireboxes	- 8.00
32. Boilers	- 6.00
33. No. 2 Sheet Scrap	-13.00
34. Carsides, Doors, Car Ends, cut apart	- 6.00
35. Unassorted Iron & Steel	- 6.00
36. Unprepared scrap, not suitable for hydraulic compression	- 8.00

Preparation Charges

Celling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin, authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, \$8.	
(2) For hydraulically compressing Grade No. 1, \$6 per ton; Grade No. 5, \$8.	
(3) For crushing Grade No. 6, \$3. For preparing into:	
(4) Grade No. 25, \$6.	
(5) Grade No. 19, \$6.	
(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, \$10.	
(7) Grade No. 17 or No. 21, \$11.	
(8) Grade No. 18, \$12.	
(9) For hydraulically compressing Grade No. 15, \$8.	
(10) For preparing into Grade No. 28, \$10.	

ration of any grade of steel scrap of dealer or industrial origin, authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, \$8.	
(2) For hydraulically compressing Grade No. 1, \$6 per ton; Grade No. 5, \$8.	
(3) For crushing Grade No. 6, \$3. For preparing into:	
(4) Grade No. 25, \$6.	
(5) Grade No. 19, \$6.	
(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, \$10.	
(7) Grade No. 17 or No. 21, \$11.	
(8) Grade No. 18, \$12.	
(9) For hydraulically compressing Grade No. 15, \$8.	
(10) For preparing into Grade No. 28, \$10.	

Celling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, \$8.	
(2) For hydraulically compressing Grade No. 13, \$6.	
For preparing into:	
(3) Grade No. 16, \$4.	
(4) Grade No. 17, \$5.	
(5) Grade No. 18, \$7.	
(6) Grade No. 21, \$4.	
(7) Grade No. 23, \$4.	

Celling fees per gross ton which may be charged for intransit preparation of cast iron are limited to:

(1) For preparing Grade No. 8 into Grade No. 7, \$5.	
(2) For preparing Grade No. 3 into Grade No. 11, \$7.	
(3) For preparing Grade No. 3 into Grade No. 1, \$4.	

CAST IRON SCRAP

Celling price per gross ton for following grades shall be f.o.b. shipping point:

Cast Iron:	
1. No. 1 (Cupola)	\$49.00
2. No. 2 (Charging Box) ..	47.00
3. No. 3 (Hvy. Breakable) ..	45.00
4. No. 4 (Burnt Cast)	41.00
5. Cast Iron Brake Shoes ..	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks ..	42.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop broken machinery ..	52.00

OPEN MARKET

(Delivered prices include broker's commission.)

Birmingham (Delivered)	
Shoveling turnings	\$30.00-32.00
Cast iron borings	30.00-32.00
No. 1 cupola cast	47.00-48.00
Stove plate	42.00
Charging box cast	39.00-40.00
Heavy breakable	36.00-37.00
Drop broken machinery	42.00-43.00
Unstripped motor blocks	35.00-36.00

Boston

(F.o.b. shipping point)	
No. 1 cupola cast	41.00
Heavy breakable	36.00
Stove plate	34.00-35.00
Unstripped motor blocks	30.00

Buffalo (Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 1 bushing	44.00
No. 1 bundles	43.00
Machinery shop turnings ..	34.00
Mixed borings, turnings ..	38.00
Cast iron borings	38.00
Short shoveling turnings ..	38.00
No. 1 cupola cast	45.50-46.50
No. 1 machinery cast	49.00-50.00

Chicago (Delivered)

No. 2 heavy melting	42.50
No. 2 bundles	42.50
Machine shop turnings	30.50-32.50
Mixed borings, turnings ..	34.50-36.50
Shoveling turnings	34.50-36.50
Cast iron borings	34.50-36.50
No. 1 cupola cast	42.00-44.00
Charging box cast	40.00-42.00
Heavy breakable	37.00-39.00
Burnt cast	35.00-37.00
Cast iron brake shoes	40.00-42.00
Stove plate	41.00-43.00
Clean auto cast	44.00-46.00
Unstripped motor blocks ..	35.00-37.00
Malleable	46.00-48.00
Drop broken machinery	46.00-48.00

Cleveland (Delivered)

No. 1 heavy melting	40.00
No. 2 heavy melting	40.00
No. 1 bundles	40.00
No. 2 bundles	40.00
Machine shop turnings	40.00
Mixed borings, turnings ..	40.00
Shoveling turnings	40.00
Cast iron borings	40.00
(F.o.b. shipping point)	
No. 1 cupola	40.00
Charging box cast	40.00
Burnt cast	40.00
Stove plate	40.00
Clean auto cast	40.00
Unstripped motor blocks ..	40.00
Malleable	40.00
Drop broken machinery	40.00

Detroit (F.o.b. shipping point)

No. 1 cupola cast	47.00
Heavy breakable	43.00
Clean auto cast	49.00
Unstripped motor blocks ..	40.00
Drop broken machinery	50.00
Charging box cast	44.00

Los Angeles (Delivered)

No. 1 heavy melting	40.00
No. 2 heavy melting	40.00
No. 1 bundles	40.00
No. 2 bundles	40.00
No. 1 cupola cast	40.00
Machine shop turnings	40.00

New York (Brokers' buying prices)

No. 2 heavy melting	40.00
Mixed borings, turnings ..	40.00
Machine shop turnings	40.00
Cupola cast	40.00-40.00
Unstripped motor blocks ..	31.00-30.00

Philadelphia

No. 1 heavy melting	41.00
No. 2 heavy melting	41.00
No. 1 bundles	41.00
No. 2 bundles	41.00
No. 1 bushing	41.00
Mixed borings, turnings ..	30.00
Machine shop turnings	30.00
Short shoveling turnings ..	30.00
No. 1 cupola cast	45.00-46.00
Unstripped motor blocks ..	38.00
Heavy breakable	41.00
Machinery cast	62.11
Charging box cast	48.11

† Ceiling price. † Nominal.
\$ Shipping point. †† Delivered

Pittsburgh (Delivered)

No. 2 heavy melting	44.00
No. 1 bundles	44.00
No. 2 bundles	44.00
Machine shop turnings	40.00
Shovel turnings	30.00
No. 1 cupola cast	40.00
Heavy breakable	40.00

† Ceiling price.

San Francisco (Delivered)

No. 2 heavy melting	50.00
Machine shop turnings	40.00
No. 2 bundles	40.00
No. 1 cupola cast	40.00

(F.o.b. shipping point)

No. 1 bundles	40.00
No. 1 cupola cast	40.00
Heavy breakable	35.00
Unstripped motor blocks ..	30.00

St. Louis (Delivered)

No. 1 cupola	40.00
Unstripped motor blocks ..	20.00


Youngstown (Delivered)

No. 2 heavy melting	40.00
No. 2 bundles	40.00
Machine shop turnings	30.00

HAMILTON, ONT. (Delivered Prices)

Heavy Melt	25.00
No. 1 Bundles	30.00
No. 2 Bundles	30.00
Mechanical Bundles	30.00
Mixed Steel Scrap	30.00
Mixed Borings, Turnings ..	30.00
Rails, Remelting	30.00
Rails, Rerolling	30.00
Busheling	30.00
Busheling new factory:	
Prep'd	35.00
Unprep'd	35.00
Short Steel Turnings	35.00
Cast Iron Graded	50.00
No. 1 Machinery Cast	50.00

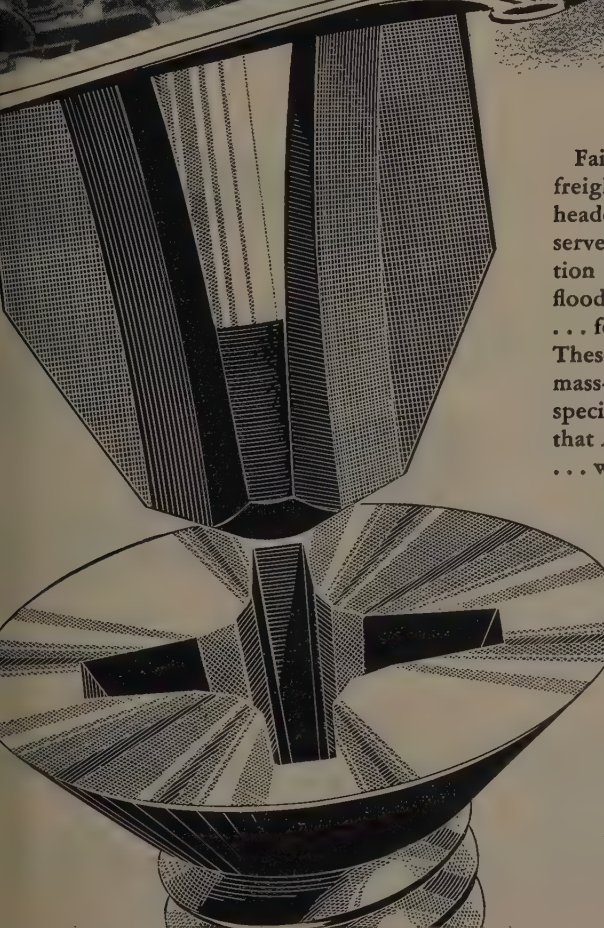
† F.o.b., shipping point.



THE AMERICAN STORY

CHAPTER FIVE:

"The Faithful Freight Car"



Faithfully on schedule, every few days, a full freight car rolls out of the Willimantic plant . . . headed for just *one* of the scores of markets served by American. Here, on this 5-acre production floor, modern machines pour out a steady flood of fasteners . . . Phillips, slotted and special . . . for high-volume buyers in *all* industries. These high-speed facilities, plus experience in mass-producing threaded fasteners, standards or specials, are the reasons why you can bank on it that *American means Action* on every order. Now . . . what do *you* need, and how soon?



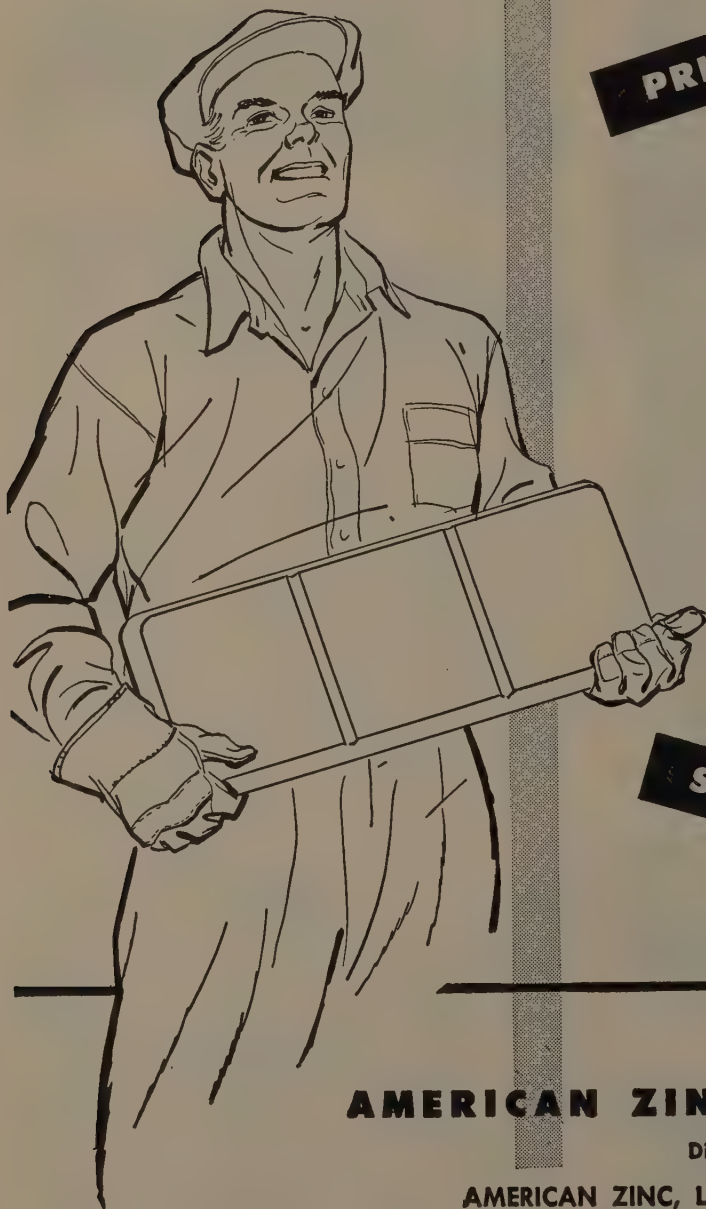
**AMERICAN
SCREW
COMPANY**

PHILLIPS HEADquarters
WILLIMANTIC, CONNECTICUT
Main Office & Plant
Willimantic, Conn.
Office & Plant, Norristown, Pa.
Office & Warehouse, Chicago, Ill.



every grade of ZINC
for urgent military and
civilian requirements

SLAB ZINC



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HIGH GRADE

SPECIAL HIGH GRADE

AMERICAN ZINC SALES COMPANY

Distributors for

AMERICAN ZINC, LEAD & SMELTING COMPANY

Columbus, O. Chicago St. Louis New York

The Metal Market

Prices are regaining importance in the metals market, indicating industry regards the days of severe shortages as a problem of the past

SET ACCENT in gaging metals trading more and more from availing to price in the new year.

It's a good indication that industry regards the days of severe shortages as fading fast. Because levels in a free market indicate degree of supply and demand, they once again assume the dominant they once enjoyed.

Illustration—Notable examples of this principle are lead and zinc, by now are off even the element's "scarce" and "conserve" Violent fluctuations were endured by these metals last year. Further adjustments will only mirror current demand-supply conditions.

It is again leading interference in by testing the market. After stabilizing during late fall and strengthening at year end, it has gone two successive price dips. Half-cent shaving last week resulted more from lack of buyers than following the trend of London trading. Zinc is in a precarious position following the lead drops. Foreign prices are well below those of U. S. prices, but fair amount of business unsatisfied here at average price.

Who Did It—International Nickel of Canada Ltd. took the price by the horns after finding OPS uncooperative. It boosted the metal's price to 60 cents, f.o.b. Port Colborne, including the 1.25-cent U. S. import duty. New price was effective Jan. 14. The parent company, not its U. S. subsidiary, now the metal to U. S. distributors, temporary set up that evidently means of bypassing OPS. American wholesale distributors pass on the 3½-cent increase on electrolytic cathode nickel, nickel sinter and other forms of primary nickel. The pass-through privilege was not given consumers though, they may have to await a new administration's action to get relief. Consumers can now apply under the industry earnings standard—GOR 10, they are losing money; GOR 29, essential producers of essential commodities.

Aluminum Over the Hump

Aluminum production is now over the hump. Northwest refineries will be allowed enough extra electricity to

raise output by nearly 600 tons weekly because DEPA lifted a 10 per cent reduction order affecting industrial users. Heavy rains and warm weather have allowed building up water levels at hydro-plants. Unless bad breaks in weather intervene, primary output will continue upward for the rest of the year.

Interruptible power denied aluminum plants since September may be restored this week by DEPA. If so another 2800 tons of pig will be forthcoming weekly. Plants affected are Alcoa's in Vancouver and Wenatchee, Wash., Kaiser's in Spokane and Tacoma, Wash., and Reynolds' in Longview, Wash., and Troutdale, Oreg.

Improvement in the power situation led the Defense Production Administration to approve the only unsatisfied claim for second quarter—7.5 million pounds of primary aluminum for the building industry.

DPA warned that no early termination of aluminum distribution controls should be expected. Second-quarter allotments will continue generally on the basis of 55 per cent of base period consumption. The best that can be hoped for is supplemental allotments to take care of needy cases.

Amount of such relief will be determined by the extent to which production climbs in the Northwest and the extent to which facilities in the expansion program come into production.

Offsetting the larger production, delays in delivery of large quantities of aluminum to the national stockpile will have to be made up; imports from Canada will drop from 117-million pounds in the first quarter to 80 million in the second; repayment of the British aluminum loan will come up for settlement; and there will be a carryover of 45 days' orders from the first to the second quarter.

Foreign Silver Rises

Foreign silver last week made its first price move since July 24, advancing a half-cent to 83.75 Jan. 13. Demand for electric and electronic applications combined with strong business for sterling and silverware manufacturers and the jewelry trade to tighten the market substantially.



Three Lions

Jumbo for Kitimat

Welders add the finishing touches to "Jumbo"—a scaffold for the Kitimat aluminum smelter project in British Columbia. It will mount batteries of drills for digging two ten-mile tunnels to bring water from the Nechako River to a power station on Kemano Bay

Normally the jewelry and silverware demand is seasonal, ending before Christmas, but this year it hasn't run true to form. Less foreign ore has been offered for smelting in this country and supplies are short. U. S. Treasury's buying and selling prices of 90.5 and 91 cents respectively are unchanged.

Business Boom for Wire Mills

Booming business in nearly all segments of industry is helping balance orders of copper wire mills more evenly. New power capacity installed in 1952 amounted to 86-million kw and additions aren't through by a long shot. Deliveries of heavy high voltage power cables used by utilities now run four to six months. Building wire materials in small sizes are readily available, though sales are beginning to pick up with construction prospects. Open space once existed on order books for magnet wire in fine sizes such as that used for television receivers. Now all segments are pretty well filled. Square and rectangular wire requires about 60-day lead time, primarily because it's used on production lines. Wire wholesalers are carrying light inventories, but can fill it quickly enough from mills if spot demands arise. ACSR is plentiful because of the number of people making it, and because restrictions on inventories and new building projects dampen demand.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 27.25c, 88-10-2 (No. 215) 40.00c; 80-10-10 (No. 305) 33.00c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 12.50c; brass special 12.75c; intermediate 13.00c; East St. Louis; high grade 13.85c, delivered.

Lead: Common 13.80c; chemical 13.90c; corrodng, 13.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 20.00c, pigs 19.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 18.80c; grade 2, 18.60c; grade 3, 18.40c; grade 4, 18.20c.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American 99.99.8% and over but not meeting specifications below 34.50c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 35.00c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 60.00c; 25-lb pigs, 62.65c; "XX" nickel shot, 63.65c; "F" nickel shot or ingots, for addition to cast iron, 60.00c. Prices include import duty.

Mercury: Open market, spot, New York, \$217-\$220, nominal, per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, \$1,595 per lb of alloy, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, \$1.75-\$2 del; special or patented shapes \$2.15.

Cobalt: 97.99%, \$2.40 per lb for 500 lb (kegs); \$2.42 per lb for 100 lb (case); \$2.47 per lb under 100 lb.

Gold: U. S. Treasury, \$35 per ounce.

Silver: Open market, New York 84.25c per oz.

Platinum: \$90-\$93 per ounce from refineries.

Palladium: \$23-\$24 per troy ounce.

Iridium: \$175-\$185 per troy ounce.

Titanium (sponge form): \$5 per pound.

Rolled, Drawn, Extruded Products
COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill, effective July 1, 1952)

Sheet: Copper 45.52; yellow brass 40.17; commercial bronze, 95% 45.15; 90% 44.33; red brass, 85% 43.10; 80% 42.34; best quality, 41.35; nickel silver, 18%, 55.08; phosphor-bronze grade A, 5%, 64.71.

Rod: Copper, hot-rolled 41.37; cold-drawn 42.62; yellow brass free cutting, 38.85; commercial bronze 95% 44.84; 90% 44.07; red brass 85%, 42.79; 80%, 42.03.

Seamless Tubing: Copper 45.56; yellow brass 43.18; commercial bronze, 90%, 47.04; red brass, 85%, 46.01.

Wire: Yellow brass 40.46; commercial bronze, 95%, 45.44; 90%, 44.67; red brass, 85%, 43.39; 80%, 42.63; best quality brass, 41.64.

(Base prices, effective July 1, 1952)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb. lots, 32.795; 30,000 lb lots, 32.92; l.c.l., 33.42. Weatherproof, 100,000 lb, 33.60; 30,000 lb, 33.85c; l.c.l., 34.35. Magnet wire del., 15,000 lb or more, 33.75; l.c.l., 35.50.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Aug. 4, 1952.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range	Widths or Diameters, In.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
Inches				
0.249-0.136	12-48	31.6	...	...
0.135-0.096	12-48	32.1	...	...
0.095-0.077	12-48	32.8	30.6	34.9
0.076-0.061	12-48	33.4	30.8	35.1
0.060-0.048	12-48	33.7	31.0	35.4
0.047-0.038	12-48	34.1	31.3	35.7
0.037-0.030	12-48	34.5	31.7	36.3
0.029-0.024	12-48	35.1	32.0	36.8
0.023-0.019	12-36	35.7	32.7	37.5
0.018-0.017	12-36	36.4	33.3	38.4
0.016-0.015	12-36	37.3	34.0	39.5
0.014	12-24	38.3	35.0	40.8
0.013-0.012	12-24	39.3	35.7	41.7
0.011	12-24	40.3	36.8	43.3
0.010-0.0095	12-24	41.4	37.9	44.8
0.009-0.0085	12-24	42.6	39.1	46.6
0.008-0.0075	12-24	44.0	40.3	48.4
0.007	12-18	45.5	41.7	50.6
0.006	12-18	47.0	43.1	55.4

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) —Round— —Hexagonal—

R317-T4	17S-T4	R-317-T4	17S-T4
0.125	54.6	...	...
0.156-0.0188	44.2	...	...
0.219-0.313	43.6	...	...
0.375	42.0	48.3	50.4
0.406	42.0	...	...
0.438	42.0	48.3	50.4
0.469	42.0	...	...
0.500	42.0	48.3	50.4
0.531	42.0	...	...
0.563	42.0	...	47.3
0.594	42.0	...	...
0.625	42.0	45.7	47.3
0.688	42.0	...	47.3
0.750-1.000	41.0	43.1	44.6
1.063	41.0	...	43.1
1.125-1.500	39.4	41.5	43.1
1.563	38.9	...	...
1.625	38.3	...	41.5
1.688-2.000	38.3	...	...

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more \$19.00 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils \$19.00 per cwt. Traps and bends: List prices plus 43%.

ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 20.00-20.50c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 21.25-21.75c; over 12-in., 21.25-21.75c.

NICKEL

(Base prices f.o.b. mill, effective Dec. 15, 1952) Sheets, cold-rolled, 79.50c. Strip, cold-rolled, 85.50c. Rods and shapes, 75.50c. Plates, 77.50c. Seamless tubes, 108.50c.

MONEL

(Base prices f.o.b. mill, effective Dec. 15, 1952) Sheets, cold-rolled 63.00c. Strip, cold-rolled 66.00c. Rods and shapes, 61.00c. Plates, 62.00c. Seamless tubes, 96.00c. Shot and blocks, 54.50c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, \$15; sheared mill plate, \$12; strip, \$15; wire, \$10; forgings, \$6; hot-rolled and forged bars, \$6.

DAILY PRICE RECORD

	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
1953								
Jan. 14-15	24.50	13.80	12.50	121.50	20.00	34.50	60.00	84.25
Jan. 13	24.50	13.80	13.00	121.50	20.00	34.50	56.50	83.75
Jan. 12	24.50	13.80	13.00	121.50	20.00	34.50	56.50	83.25
Jan. 7-11	24.50	14.30	13.00	121.50	20.00	34.50	56.50	83.25
Jan. 2-6	24.50	14.55	13.00	121.50	20.00	34.50	56.50	83.25
1952								
Dec. Avg.	24.50	13.925	12.50	121.50	20.00	34.50	56.50	83.25
Nov. Avg.	24.50	13.965	12.50	121.50	20.00	34.688	56.50	83.25
Oct. Avg.	24.50	14.228	12.59	121.50	20.00	39.00	56.50	83.25
Sept. Avg.	24.50	15.80	13.99	121.50	20.00	39.00	56.50	83.25
Aug. Avg.	24.50	15.80	14.067	121.50	19.923	39.00	56.50	83.25
July Avg.	24.50	15.80	15.00	121.50	19.00	39.00	56.50	82.885
June Avg.	24.50	15.06	15.74	121.50	19.00	39.00	56.50	82.75
Jan. 1952 Avg.	24.50	18.80	19.50	109.404	19.00	50.00	56.50	88.00
Jan. 1948 Avg.	21.50	14.825	11.056	94.00	15.00	63.00	33.75	74.625

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9% base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.00c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; shipping point, freight allowed: Flat, red 38.34c; oval 37.84c.

Nickel Anodes: Rolled oval, carbonized, loads, 74.50c; 10,000 to 30,000 lb 75.50c; 10 to 10,000 lb 76.50c; 500 to 3000 lb 77.50c; 100 to 500 lb, 79.50c; under 100 lb, 81.50c. f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 36.00c in lots of 300 lb through 10,000 lb; 36.00c over 10,000 lb f.o.b. Cleveland, freight allowed on 300 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers 36.7c; 100 or 300 lb drums only, 100 to 600 lb 71.60c; 700 to 2000 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, \$1,425 to 999 lb, \$1,425; 200 to 499 lb, \$1,43c; less than 200 lb, \$1,445. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Zinc Cyanide: 100 lb drums, less than 54.30c, 10 or more drums, 52.30c, Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb kegs less than 2000 lb \$1.11; more than 2000 lb \$1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb kegs 98.5c; 100 lb kegs 99.5c. Freight allowed.

Scrap Metals

Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point effective July 1, 1951.

	Clean	Rod	Car
	Heavy	Ends	Turnings
Copper	21.50	21.50	21.50
Yellow Brass	19.125	18.875	18.875
Commercial Bronze			
95%	20.50	20.25	17.50
90%	20.50	20.25	17.50
Red Brass			
85%	20.25	20.00	13.75
80%	20.125	19.875	13.75
Muntz metal	18.125	17.875	13.75
Nickel silver, 10%	21.50	21.25	17.50
Phos. Bronze, 5%	25.25	25.00	20.00

Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 40,000 lb f.o.b. point of shipment)

Group 1: No. 1 copper 19.25; No. 2 copper 18.50; and mixed heavy 17.75; light 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass, 17.00 per lb of content for 50 to 60 per cent material; 17.25 per lb for over 60 per cent material; Group II: No. 1 soft red brass solids 16.00; No. 1 composition borings 19.25 per lb of content plus 63 cents per lb of tin; mixed brass borings 19.25 per pound; mixed plant scrap: Copper-free solids, unlined red car boxes 18.25; lined red boxes 17.25; cocks and faucets 16.00; brass screens 16.00; zincy bronze solids borings 16.25.

Aluminum Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment, less than 5000 lb)

Segregated plant scrap: 2s solids, copper 10.50; high grade borings and turnings 9.00; No. 12 piston borings and turnings, 7.75; mixed plant scrap: Copper-free solids, dual type, 9.00. Obsolete scrap: Fuel cable, 10.00; sheet and sheet turnings, 7.75; castings and forgings, 7.75; clean piston of struts, 7.75; pistons with struts, 5.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

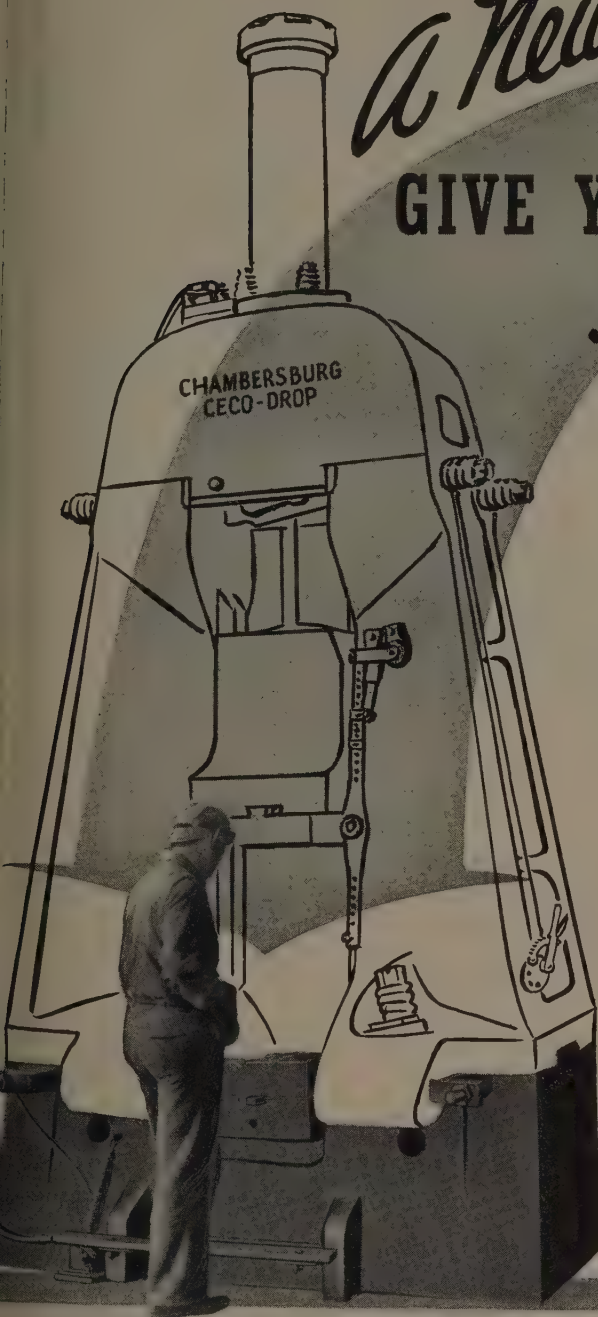
Lead: Heavy 10.75; battery plates 5.90; type and stereotype 12.50; electrolyte mixed babbitt 13.75. Zinc: Old zinc, 5.50; new die cast scrap, old die cast scrap, 4.00.

GIVE YOUR BOARD DROP HAMMERS

a New lift!

GIVE YOUR OPERATORS

New life!



**YOUR PRESENT ANVILS PLUS
CECO-DROP UPPERWORKS**

*can mean quick modernization
at a minimum cost
and can put new life in your operators*

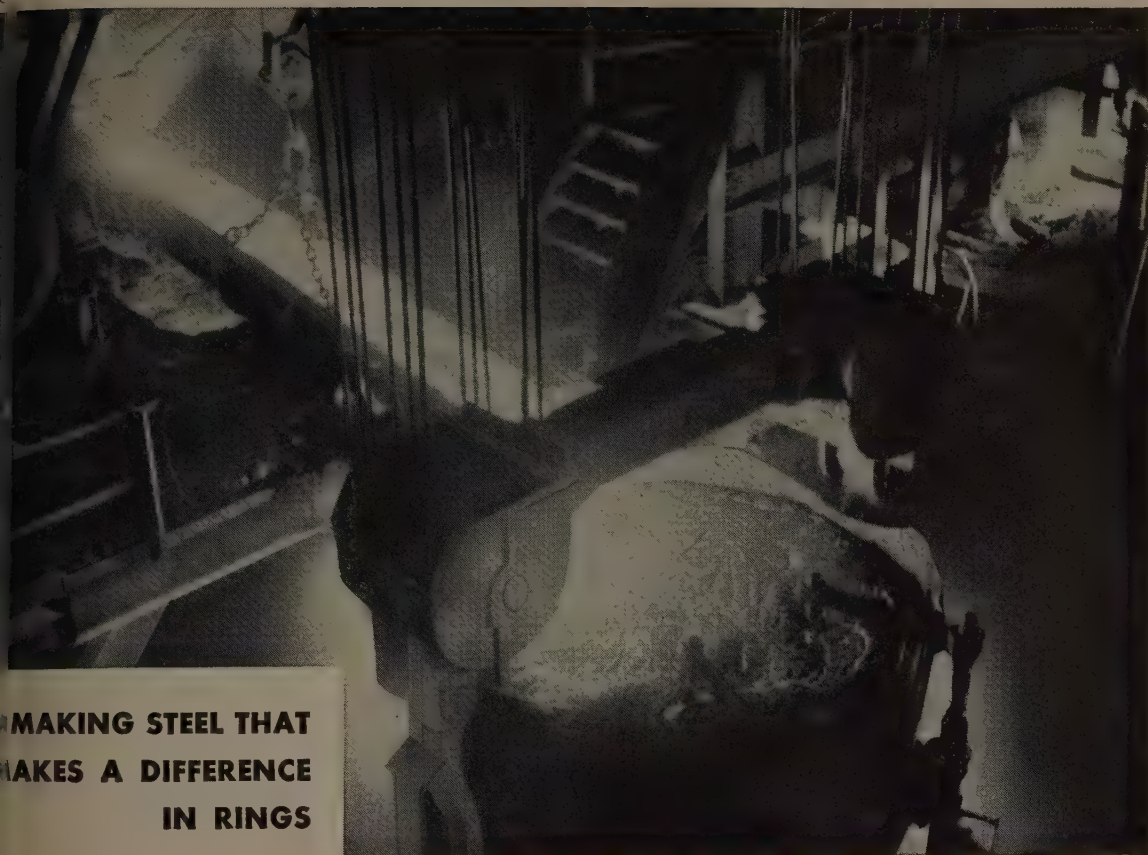
Here's a good suggestion: You can install Ceco-Drop upperworks on your existing board drop hammer anvils. Thus at a considerable saving you will be in a position to meet and beat tomorrow's stiff competition. You will produce more accurate forgings at a lower cost through more continuous production. You will have the most modern forging hammers available. Your hammermen will end their shifts fresh and still full of pep.

That's part of the Ceco-Drop story. The rest is in Bulletin 11-L-O a copy of which will be sent on request. Write today.

CHAMBERSBURG ENGINEERING CO., CHAMBERSBURG, PA.

CHAMBERSBURG

THE HAMMER BUILDERS



MAKING STEEL THAT MAKES A DIFFERENCE IN RINGS

By making its own steel in five open hearth furnaces, the Standard Steel Works Division constantly controls the steel in its forged rings and flanges. A combined yearly capacity of 100,000 tons of carbon and alloy steel are made by the acid open hearth method. This process makes possible more definite control of chem-

ical reactions, assuring steel high in quality and tensile properties.

Thus one big reason why you should always call Standard for rings and flanges is the fact that Standard is able to produce and control the analysis and physical properties of the steel going into its products.

ONE OF SIX REASONS why you should always call Standard Steel for rings and flanges

1. Quality Steel—through production of own steel by acid process.

2. Uniformity—assured by precise control of forging and rolling operations.

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4. Capacity—unsurpassed ability to produce weldless rings all the way up to 144" O.D.

5. Experience—produced by skilled workmen with 20 to 40 years experience.

6. Fast Service—a vital factor in the continuing growth of Standard Steel for over 150 years.

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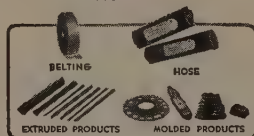
good corn crops start with—

REPUBLIC RUBBER CONDUIT

Flexible Pipe Connections Cut Handling Costs—reduce waste on all production line jobs

Delicate hybrid seed corn is just one typical example of many items handled quickly and safely with the help of Republic Flexible Rubber Conduit. These versatile rubber-lined tube connectors protect the seeds against impact during transfer. They muffle noise and reduce vibration. They outwear metal. Flexible Republic Rubber Conduits are made in long or short lengths for almost every kind of industrial service. Because of their construction and rubber lining, they easily assume any desired curvature without distortion. They can be slipped over piping in a moment's time, and, if there's a possibility of slippage or leakage, Republic Rubber Conduits can be nailed, clamped or applied by means of screws. So simple-to-use, yet so profitable! Republic Rubber Conduits are available through your local Republic Distributor. Write now for full facts and dimensions required.

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Since 1901, Republic Rubber has been the outstanding source for all types of Industrial Rubber Products. Write us today for the name of your local Republic Rubber Distributor, who can save you time and money through expert installation, application and maintenance service.

REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS



asides. This causes some schedule disruption.

Los Angeles — Large-sized cold finished bars are tight, small size rounds and flats, easier. Demand has eased for small diameter hot-rolled bars and some distributors are not taking their allotments in this product.

Wire . . .

Wire Prices, Page 123

Pittsburgh — Demand for manufacturers wire products continues strong and is expected to remain so through the second quarter of this year. Main spring of this demand is the automotive industry. Furniture and bedding manufacturers are making a strong bid for high carbon wire. Merchant wire products, especially nails, barbed and fence wire are comparatively easy.

Birmingham — Most distributors report a seasonal easing in agricultural demand for wire. Most users manufacturers wire are being taken care of satisfactorily.

Tin Plate . . .

Tin Plate Prices, Page 122

Washington — Second quarter export quota on production tin plate for food and petroleum packaging abroad will be 138,000 short tons, U. S. Office of International Trade, Commerce Department, announced last week. Of this total, 118,035 tons are for food packaging and 19,965 tons for petroleum packaging. The first quarter quota was 118,875 tons, 97,500 being for food and 21,375 tons for petroleum packaging. The second quarter increase reflects continuing improvement in domestic supply. The 118,035 tons licensed for food packaging will be distributed among 10 countries.

Los Angeles — Entire 1953 output of Kaiser Steel Corp.'s Fontana Works tin plate mill has been taken by major tin can manufacturers.

Structural Shapes . . .

Structural Shape Prices, Page 121

New York — Public work, bridge in particular, still dominates the structural market. Featuring inquiry are 9000 tons of approach work for the New York state thruway bridge across the Hudson, off Rockland county. Plans for this bridge are being redesigned to require about 54,000 tons, compared with earlier estimate of 60,000 to 65,000 tons. No bids were received on the original opening.

Boston — District shops are buying more foreign structurals at a price close to 5.00c a pound, net, Boston dock. Where direct arrangements have been made with foreign mills, substantially lower prices are reported. Allotments of domestic structurals to some fabricators were halved for March, stimulating buying of foreign material.

Philadelphia — Structural activity is supported principally by bridge work and various government defense projects. Ban on some type of commercial construction is being eased.

Pittsburgh — Structural steel book is filling rapidly, but mainly for

struction already in progress. Main civic legal matters have held awarding of the San Rafael bridge contract which will require about 40,000 tons of structurals. Chicago—Mill commitments don't expect any easing in structural demand. One shape maker, who gave first quarter quotas to customers in case of overwhelming carryover, set up second quarter quotas. Allowances, however, are only about 10% of those given in third quarter 1953.

Seattle—Fabricating plants are in comfortable position, except as to supply of some items, principally in flange sections and plates.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 121

Seattle—Except for a 10 per cent price restriction, rolling mills are in at capacity operation following the holidays. Backlogs are higher than normal and prospects for the next six months are excellent.

Pig Iron . . .

Pig Iron Prices, Page 120

Philadelphia—Foundry iron continues in ample supply because converters are operating on a limited basis. Basic iron is tight. A cargo of iron enroute from Australia is being shipped by United States Steel from New England to Philadelphia for rail shipment to Morrisville, Pa. The open hearth is down for repairs at that plant. Cargo contains an estimated 8000 tons and is a part of the 30,000 tons placed by the firm in the time ago. One cargo was received at Providence, R. I., recently. New York—Pig iron supply remains slightly in excess of requirements. District gray iron foundries have increased operations, although not as high as the limited supply prior to the year-end holidays. The immediate outlook is for no important improvement.

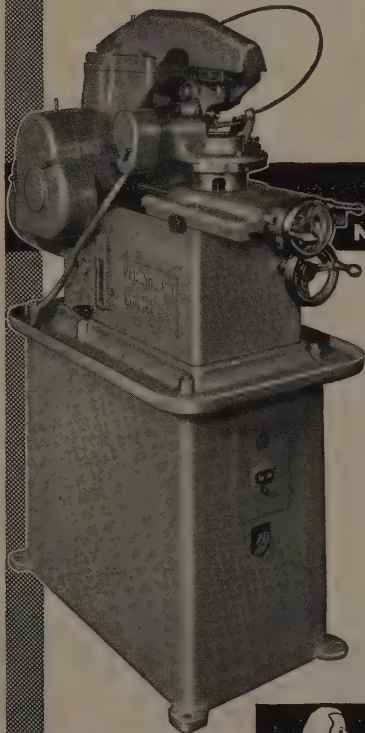
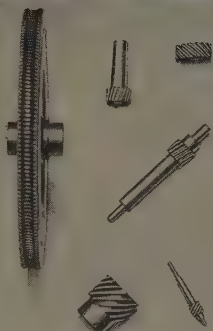
Buffalo—With automotive and building equipment casters calling for substantial tonnages, merchant iron producers have no trouble in meeting their current output. Some of the smaller jobbing foundries still are working on a curtailed basis.

Pittsburgh—Pig iron demand is active, some being extra-territorial. Several steel companies are adding to this demand by placing open market orders for iron to replace ingots lost while some of their furnaces are down for repairs. Foundry demand continues low.

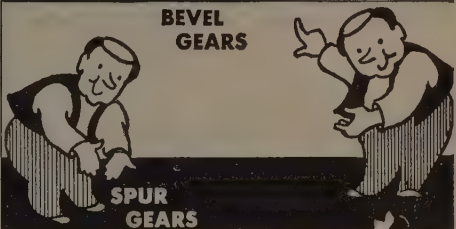
Youngstown—U. S. Steel Corp. plans to blow out its No. 4 blast furnace at its Ohio Works here Feb. 15 for about 20 or 21 days. This will be the first important change in iron or steel production here for any week since early last fall.

Chicago—Foundry pig iron is in the closest supply-demand balance in the last 12 months. Thus, the current pickup in gray iron castings orders isn't likely to create any serious tension in the next few weeks. St. Louis—Granite City Steel Co. converted one of its two blast furnaces to foundry pig iron production to supply consumers whose reserves had become depleted during both the two-month devotion to basic. Though melters are still on quota,

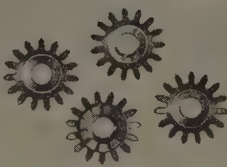
WORMS WORM GEARS SPIRAL GEARS



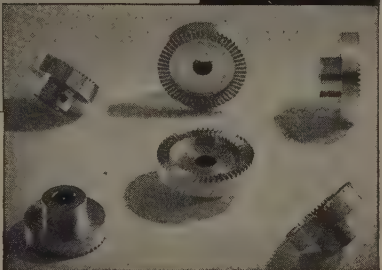
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most of the pressure is gone from demand.

Birmingham—Virtually all the district's melt of pig iron is still going into the surrounding territory.

Fontana, Calif.—Kaiser Steel Corp. turned out 977,267 tons of pig iron in 1952, as against 921,752 tons in 1951. December was a peak month, accounting for 91,165 tons. With a third blast furnace scheduled for initial operations in the spring, the company's capacity will be raised to 1,314,000 tons a year.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 125

Washington—An industry earnings standard increase in prices of beehive oven coke averaging 6 per cent was authorized last week by the Office of Price Stabilization. The increase, provided in amendment 15 to SR 13, general ceiling price regulation, effective Jan. 12, is based on the industry's sales during the 12 months ending Apr. 30, 1952.

As in the case of ceiling price relief granted producers of by-product oven coke, producers of beehive coke are permitted to increase ceiling prices of the different grades by varying amounts. The increases, however, may not total more than 6 per cent of sales in the year ended Apr. 30, 1952, and no one ceiling price may be increased more than 10 per cent. Beehive coke production in 1952 was valued at an estimated \$65 million, comparing with \$100 million in 1951.

Chicago—Demand for foundry coke is increasing. Gray iron castings business is picking up noticeably and producers find they had let their yearend coke inventories drop to lower levels than they had realized.

Warehouse . . .

Warehouse Prices, Page 127

New York—While warehouses could sell more sheets and tubular products, there are signs of slight easing in demand. Distributors have a better inventory balance and they are gradually replenishing stocks to pre-strike levels. Bolts, nuts and nails are slow; prices are soft on the latter. Alloys and specialties are more easily available; inquiries from normal mill buyers are slackening since their receipts from mills are improving. Foreign steel in standard carbon grades is offered in larger quantities at lower prices.

Boston—With few products excepted, notably hot and cold-rolled sheets, pressure for steel from warehouses is easing slightly. First apparent in tool steel and other specialties, it now applies to additional steel products.

Philadelphia—Warehouses report active demand and most of them look for January business to exceed that of December, which was the best for that month in recent years. Only in galvanized sheets and small cold-drawn bars does demand appear to be lagging.

Pittsburgh—Warehouses report continued heavy demand from customers. Stocks, on the other hand, are still sorely out of balance. Warehousemen report that the present

situation is no better than it has ever been. In addition to heavier material, lighter plates and smaller sizes of cold-finished bars are in big demand and short supply.

Los Angeles—Warehouse sales are sustained at the December level, a month of high activity. With inquiries more numerous and with inventories approaching 75 per cent of normal, distributors describe warehouse conditions as "healthy."

Scrap . . .

Scrap Prices, Page 128

Detroit—The Detroit market for open-hearth, electric furnace and blast furnace grades of scrap continues at ceiling levels. Strong demand is reported. Sales of blast furnace material were made to Ford last week. Cast scrap, however, continues easy and is moving sluggishly at below ceiling prices. The movement of this material is restricted but there is no panicky selling.

Chicago—Scrap is no deterrent to all-out steel production. Mill inventories are in the neighborhood of 60 days. Receipts are substantial. Dealers' inventories of steelmaking grades are low. Bad weather can't impose any crippling obstacle between now and spring. Foundry operations are improving but cast scrap continues in the doldrums. Prices are depressed several dollars a ton.

New York—A firmer trend has developed in No. 1 cupola cast. At least one leading consumer made an effort to do better than the \$45 delivered price without success, finally placing more tonnage at that level. Heavy breakable cast, on the other hand, continues easy, with the Phoenixville, Pa., consumer withdrawing from the market. Steel scrap prices remain firm.

Buffalo—Sharp decrease in dealers' receipts of scrap is forcing mills to draw from reserve stocks to maintain current capacity operations. Cast continues weak with small sales reported at unchanged prices.

Philadelphia—An outside broker is offering \$45, f.o.b. Philadelphia, for charging box cast and a few carloads have been purchased at this level. This is equivalent to around \$48 delivered. The market otherwise is unchanged, with all steel grades holding at ceiling and most cast grades moving at less than ceiling.

Pittsburgh—Mills' scrap inventories are high. The market is characterized by two extremes: Demand is active for low-phos grades and railroad specialties; slow for run-of-the-mill items. The only activity among cast grades centers around machinery cast. Prices are lower on No. 1 cupola cast at \$46 and on heavy breakable at \$43.

St. Louis—Following a heartening pickup in scrap shipments to this district, bad weather forced the local market back into the doldrums. No significant buying is reported, largely because brokers can't fill all old orders. Mills are taking all the open-hearth grades they can get, but receipts are less than daily melt. Earlier open weather had given them an average stockpile of 60-days, so they are far less concerned than

brokers about tight shipments. Dealers' yards are practically bare.

Birmingham—Moderate pickup in scrap activity is evident here with the district's biggest user back in the market for moderate tonnage in carlots or larger. Some melting steel continues to go to Georgia producer, but bulk of the tonnage is moving out of the district, largely by barge. Not a great deal of buying is evident in city grades with the exception of cupola cast which is moving at \$44-45.

Los Angeles—With demand for foundry scrap weaker, prices of No. 1 cupola cast fell \$1 to \$45. Movement of steelmaking scrap is steady but mill interest is weakening.

Seattle—The bearish influence of large stocks of scrap in California is reflected in the local market where heavy melting is now being bought at \$2 to \$3 under ceiling. Good material is arriving in tidewater in satisfactory volume, although inventories are not rising rapidly. Bundles and motor blows are quoted at \$29.

Foundry To Be "Mothballed"

Pittsburg, Calif.—A government foundry here, operated by Columbia-Geneva Steel Division, U. S. Steel Corp., and presently undergoing restoration and rearrangement for production of armor steel hull casings will be placed in "mothball" after its rehabilitation, says the San Francisco Ordnance District.

Columbia-Geneva will continue to operate the foundry's two open hearths on a tonnage rental contract with the government.

The program of rehabilitation, begun under Columbia-Geneva's direction in August, 1952, will be continued. Upon completion, that part of the foundry equipped for the production of armor castings will be placed in a standby position for future utilization in case of an emergency requirement.

The decision to hold the plant in reserve instead of operating it immediately following completion of the installation of \$9.5 million additional equipment follows announcement of a cut-back in tank and automotive defense items by the Department of Defense.

STRUCTURAL SHAPES . . .

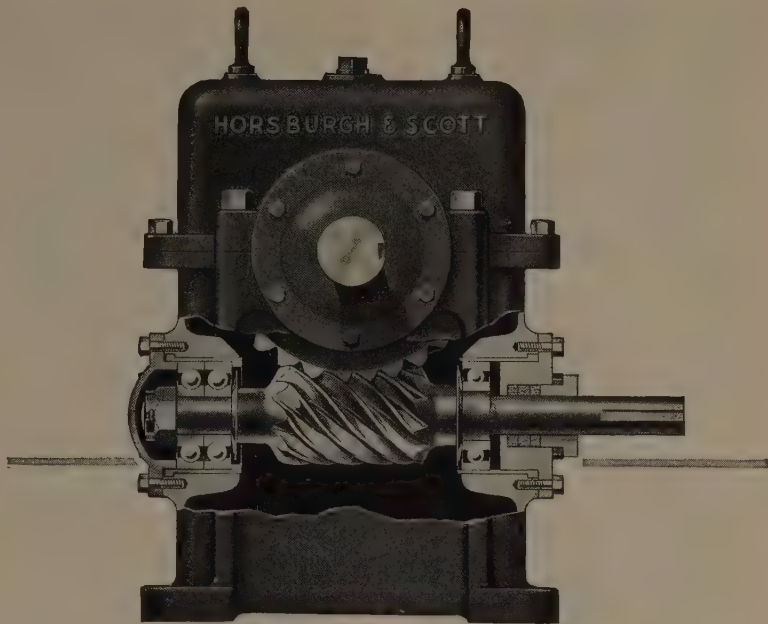
STRUCTURAL STEEL PLACED

- 18,000 tons, power plant, Madison, Ind., American Gas & Electric Service Co., Cincinnati, to Mississippi Valley Structural Steel Co., Decatur, Ill.
- 15,000 tons, power house, Cheshire, O., American Gas & Electric Service Co., Cincinnati, to American Bridge Co., Pittsburgh.
- 970 tons, medical center buildings, Cy Dietrich, Md., through Ajax Construction Co., general contractor, to unnamed fabricator.
- 950 tons, maintenance-traffic depot, laboratory, State Department of Public Works, Route 9, Wellesey, Mass.; Construction Co., Boston, low.
- 740 tons, warehouse and office building, 314 31st St., New York, through Gotham Construction Co., that city, general contractor to Sherry & Gordon Inc., Bronx, New York.
- 560 tons, state bridge, Vernon-Tolland, Conn. to Bethlehem Steel Co.; M. A. Gamble Construction Co., Providence, R. I., general contractor; also 165 tons, steel piling, same fabricator.
- 550 tons, pier shed, Fall River, Mass.

ermann Structural Steel Co., Holyoke, Mass., through Carlson Construction Co., Weymouth, Mass.
 ons, sludge disposal structures, sewage treatment plant, Washington, to Barber & Sons, that city; Charles H. Tompkins Co., Washington, general contractor.
 ons, three-span continuous deck plate girder bridge, Deerfield river, Readsboro, to Phoenix Bridge Co., Phoenixville, Pa., through W. H. Morse Construction Lumber Co., Bennington, Vt., general contractor.
 ons, state bridge, Green county, New York, through Savin Construction Co., to Phoenix Bridge Co., Phoenixville, Pa.
 ons, science and art building, Marymount College, Tarrytown, N. Y., through Skinner Cook Inc., general contractor, to Grand Central Works, Bronx, New York.
 ons, maintenance hangar and service building, airport, Burlington, Vt., to Verht Structural Steel Corp., Burlington; Wilson Construction Co., Manchester, N. H., general contractor.
 ons, test laboratory, naval shipyard, Portsmouth, N. H., to Groussier & Shlager Iron Works, Somerville, Mass.; Farina Bros., Newton, Mass., general contractor.
 ons, buildings and facilities, Chemical Corps training command, Fort MacClelland, Ala., to Sherwood Moore Iron Works, Montgomery, Ala.; Shelby Construction Co., New Orleans, general contractor.
 ons, Junior High School No. 26, Queens, New York, through Psaty & Furman Inc., general contractor, to Simond - Holland, Brooklyn, N. Y.
 ons, state highway bridge, Lincoln, R. I., to Phoenix Bridge Co., Phoenixville, Pa., through M. A. Gammino Co., Providence, R. I., general contractor.
 ons, county bridge, Ulster county, New York, through Fred W. Johnson Co., to Pine Brook Iron Works, Scranton, Pa.
 ons or more, medical school and teaching hospital, University of Mississippi, Jackson, Miss., to Hawkins Iron Co., Birmingham; Farnsworth & Chambers Construction Co., Houston, Tex., general contractor.
 ons or more, operations, garage and superbuilding, naval air station, Oceana, Va.; Globe Iron Construction Co., Norfolk, Va.; Virginia Engineering Co. Inc., Newport News, Va., general contractor.

STRUCTURAL STEEL PENDING

ons, approach work, Hudson river bridge, Rockland county, New York state thruway, bids Jan. 29; plans for bridge are being redesigned with the probability that the project will require around 54,000 tons of structural steel, including approach now being advertised.
 ons, superstructure, twin bridges, Cuyahoga river, Summit county, Ohio; bids Jan. 14, Ohio Turnpike Commission, Columbus, O.
 ons, including 4100 tons silicon or low alloy steel, bridge superstructure, Missouri, at the Paseo, Kansas City, Mo.; also 100 tons castings, and 350 tons, cables and spenders; bids in.
 ons, hangar, Army Corps of Engineers, Gulf Field, Wrightstown, N. J., to T. C. Carson Construction Co., Dallas.
 ons, 9-story basic science building, state medical center, Brooklyn, N. Y.; bids asked.
 ons, superstructure, twin bridges over Rumee river, Ohio turnpike, Lucas and Wood counties, Ohio; bids Jan. 21, Columbus, O.
 ons, hangar, Army Corps of Engineers, Maxwell, N. Mex., bids closed Jan. 13.
 ons, hangar, Army Corps of Engineers, Paso, Tex., bids closed Jan. 6.
 ons, steel transmission towers, Tennessee Valley Authority, Washington.
 ons, hangar, Army Corps of Engineers, Assier Parish, La.; bids closed Jan. 15.
 ons (some galvanized), Corps of Engineers, Pittsburgh.
 ons, five bridges, Amesbury-Salisbury, Mass.; bids Feb. 3, state Department of Public Works, Boston.
 ons, five bridges, Mahoning county, Ohio; bids in to Ohio Turnpike Commission, Columbus, O.
 ons, Garden State parkway, section 7, contract 14, Middlesex county, New Jersey, general contractors' bids Jan. 26, the steel to be furnished by the New Jersey Highway



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240 tons, postal terminal, New Haven, Conn.; Samuel Poorvu Inc., Boston, general contractor.

200 tons, powerhouse framing, also gates, hoists, etc., Little Porcupine project, Montana; bids invited by Bureau of Reclamation, Denver, about Jan. 20.

REINFORCING BARS . . .

REINFORCING BARS PLACED

990 tons, buildings and facilities, Chemical Corps training command, Fort MacClelland, Ala., to Virginia Steel Co., Richmond, Va.; Shelby Construction Co., New Orleans, general contractor.

450 tons, test laboratory, naval shipyard, Portsmouth, N. H., to Concrete Steel Co., Boston; Farina Bros. Co., Newton, Mass., general contractor.

425 tons, state bridge and highway project, Vernon-Tolland, Conn., to Bethlehem Steel Co.; M. A. Gammino Construction Co., Providence, R. I., general contractor.

340 tons, barracks and mess hall, Great Falls, Mont., to Bethlehem Pacific Coast Steel Corp., Seattle; Lease & Leigland, Seattle, general contractors.

150 tons, facilities, Ault Field, Washington state, to Bethlehem Pacific Coast Steel Corp., Seattle; Valley Construction Co., Seattle, general contractor.

140 tons, sludge disposal structures, sewage treatment plant, Washington, to Fabricators Steel Corp., that city; Charles H. Tompkins Co., Washington, general contractor.

100 tons or more, Spaulding school, Newton, Mass., to Truscon Steel Division, Republic Steel Corp., Boston, and Security Steel & Wire Works, Boston; Rich Bros. Construction Co., Boston, general contractor.

100 tons, state highway bridge, Simsbury, Conn., to Joseph T. Ryerson & Son Inc., Cambridge, Mass.; Jones Construction Co., Columbia, Conn., general contractor.

100 tons or more, warehouse, Marine Corps supply depot, Albany, Ga., to Joseph H. Fox

& Co., Birmingham; Batson-Cook Co., West Point, Ga., general contractor.

100 tons or more, medical school and teaching hospital, University of Mississippi, Jackson, Miss., to Contractors' Material Co., Jackson; Farnsworth & Chambers Construction Co., Houston, general contractor.

100 tons or more, operations, garage and supply building, naval air base, Oceana, Va., to Hall-Hodges Co. Inc., Norfolk, Va.; Virginia Engineering Co. Inc., Newport News, Va., general contractor.

100 tons or more, housing project, Bridgeport, Conn., to Truscon Steel Division, Republic Steel Corp., New York; E. & F. Construction Co., Bridgeport, general contractor.

100 tons or more, housing project, New Britain, Conn., to Ceco Steel Corp., New York; Frouge Construction Co., Bridgeport, Conn., general contractor.

REINFORCING BARS PENDING

4500 tons, Columbia Point housing project, Boston; John Bowen Construction Co., Boston, low.

2000 tons, Little Porcupine powerhouse, Montana; bids to Bureau of Reclamation, Denver, to be invited about Jan. 20.

1085 tons, superstructure, twin bridges, Cuyahoga river, Summit county, Ohio; bids Jan. 14, Ohio Turnpike Commission, Columbus, O.

1000 tons, Commonwealth pier No. 1, East Boston terminal, Boston; Raymond Concrete Pile Co., New York, low.

1000 tons, maintenance-traffic depot and laboratory, State Department of Public Works, Route 9, Wellesley, Mass.; Canter Construction Co., Boston, low.

825 tons, Garden State parkway, section 7, contract 14, Middlesex county, New Jersey, general contractors' bids Jan. 26, the steel to be furnished by the New Jersey Highway Authority as specified; also 6800 linear feet of steel bearing piles.

480 tons, superstructure, twin bridges over Maumee river, Ohio turnpike, Lucas and Wood counties, Ohio; bids Jan. 21, Columbus, O.

435 tons, bridges and culverts, Ohio turnpike, Mahoning county, Ohio; bids in to Ohio Turnpike Commission, Columbus, O.

365 tons, substructure, twin bridges, Maumee river, Ohio turnpike, Lucas and Wood counties, Ohio; also 230 tons, low alloy steel protection plates and 3400 linear ft. of steel piling; bids Jan. 21, Ohio Turnpike Commission, Columbus, O.

320 tons, bridge superstructure, Mississippi river, Kansas City, Mo.; also 9000 sq. ft. open grating.

290 tons, substructures, five overpasses, Virginia turnpike, Raleigh county, Va.; Virginia; bids in.

100 tons, piers and abutments, Four-Mile bridge, West Virginia turnpike, Kanawha county, West Virginia; bids in.

PLATES . . .

PLATES PLACED

525 tons, oil storage tanks, New Haven terminal Inc., New Haven, Conn., to Bethlehem Steel Co.

160 tons, tank, Socony Vacuum Oil Co., Sacketts Harbor, N. Y., to Bethlehem Steel Co.

100 tons, water tank, Convent, Fla., to Chicago Bridge & Iron Co., Chicago.

PLATES PENDING

155 tons, boiler plate, Corps of Engineers, Pittsburgh; also 160 tons carbon steel bars; bids in.

130 tons, Corps of Engineers, Kansas City, Mo.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Atchison, ten 1200-hp diesel electric switchers, to Fairbanks, Morse & Co., Chicago.

RAILS PLACED

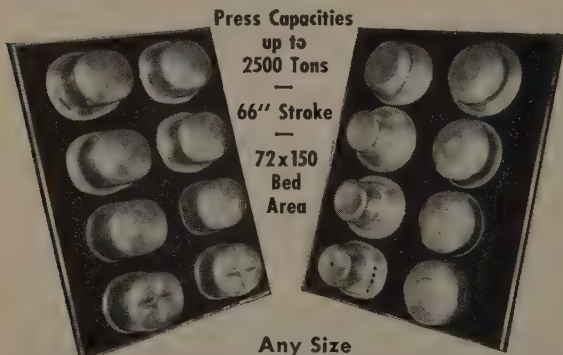
Great Northern, 1100 tons of tie plates, 80 100 tons of nuts and bolts, to Bethlehem Pacific Coast Steel Corp., Seattle.

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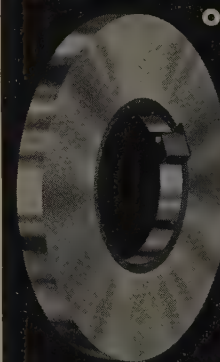


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CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

Industrial Smelting Opens Plant

Industrial Smelting Inc. formally opened its \$100,000 aluminum smelting plant in Youngstown. The firm smelt extrusion scrap for Trimble Inc., manufacturer of metal framing, and Aluminum Air Seal Co., a manufacturer of storm windows and doors. Equipment includes gas-fired crucible type tilting ladles. Some laboratory equipment will be added later so that the firm can smelt other types of alloys and accommodate other customers.

Chemical Plans Expansion

Allied Chemical & Dye Corp., New York, is expanding the research and engineering facilities of its Nitrogen Division at Hopewell, Va. The \$1 million project is scheduled for completion in May.

State Honors Veteran Employees

Testa Machine Co., Pittsburgh, held its fifth annual distribution of service awards to those employees who have served the company for 10, 20, 30, 40, 50 and 60 years. This year 289 employees were recipients of the awards. Of these, three rounded out 50 years of service and were presented with watches: Lorens Iversen, president; Andrew W. Beers; and Nicholas A. Rice.

Work Starts on Canadian GE Plant

Ground has been broken for a 28,000 sq ft addition to the Canadian General Electric plant in Barrie, Ont.

Control of Metal Products Firm

Chesapeake Industries Inc., West Point, Va., purchased more than 95 percent of the capital stock of Virginia Metal Products Corp., manufacturer of metal doors, window frames and partitions.

Harrisburg Steel Plans Merger

Harrisburg Steel Corp., Harrisburg, Pa., plans to merge with Heckett Engineering Inc. The latter firm specializes in the reclamation of raw material, primarily used in steel plants, and now owns operating facilities at 11 major steel plants in the United States and Canada. If the proposal is approved by stockholders at a special meeting Mar. 17, Eric H. Heckett will become chairman of the board of Harrisburg Steel Corp. while Joseph Simpson will continue to act as president and chief executive officer. Heckett will continue to serve as president of Heckett Engineering in charge of its operations. Harrisburg

Steel also will acquire Heckett's subsidiaries, including Heckett International Corp.

Quaker Rubber Completes Project

Installation of two large conveyor belt presses marks completion of the \$250,000 belt department expansion at Quaker Rubber Corp., a division of H. K. Porter Co. Inc., Philadelphia.

Motor Products To Build Addition

Deepfreeze Appliance Division, Motor Products Corp., Detroit, is building a \$1.5 million addition to its plant in Lake Bluff, Ill., which will permit an increase of 100 per cent in its production of home freezers.

Reynolds Metals Appoints Agent

Reynolds Metals Co., Louisville, appointed Nathan Trotter & Co., Philadelphia, as distributor of its primary aluminum to foundries in that area.

Large Military Projects Pend

Military construction projects totaling \$314 million are scheduled to be under contract by April through the Seattle, Walla Walla, Wash., and Alaskan district offices of the Corps

of Engineers. More than 300 individual jobs are planned. The breakdown by district offices is: Seattle, \$16.3 million for Army projects and \$26.7 million for Air Force work; Walla Walla, \$2.5 million for Army construction and \$28.2 million for Air Force; Alaska, \$125 million for Army and \$115 million for Air Force.

Sharon Steel Forms Subsidiary

Sharon Steel Corp., Sharon, Pa., organized Brainard Steel Canadian Division as a subsidiary which will have general offices and a plant in Toronto, Ont., manufacturing various steel strapping products. P. J. McArthur is general manager of the division.

Ford To Boost Transmission Output

Ford Motor Co., Dearborn, Mich., plans to expand the capacity of its Automatic Transmission Division in the Cincinnati area. Tentative plans call for construction of a manufacturing plant with 350,000 sq ft and provision for possible expansion. The first portion, part of which probably would be devoted to defense production, may be in operation late in 1953 or early in 1954. The new plant in Sycamore township, Ohio, would serve solely as a manufacturing facility, while the present plant

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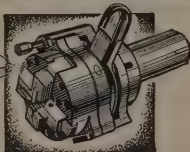
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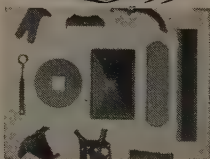
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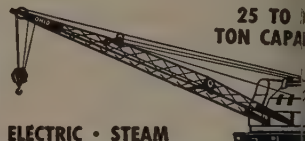
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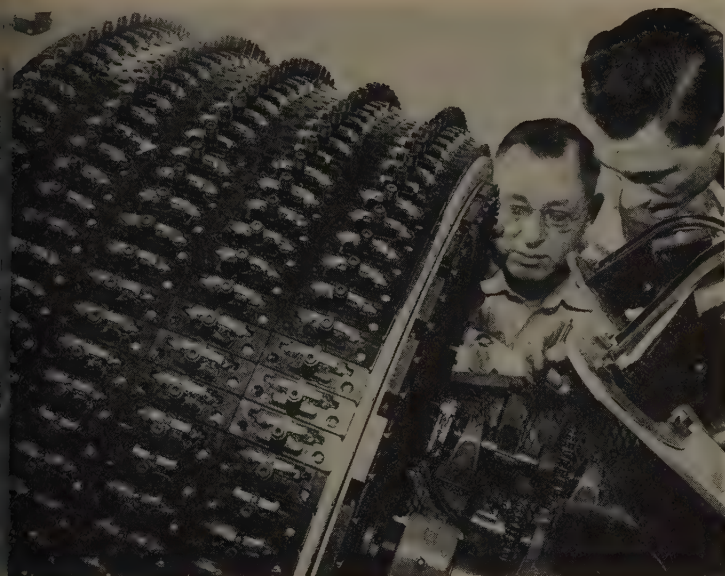


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Constantly revolving, rocking drum speeds Minneapolis-Honeywell Regulator's production of mercury switches. Designed by the company's aeronautical division, the drum tilts switches back and forth about 11,520 times daily until it completes 36,000 cycles for each of the 1000 switches it carries. Rocking action distributes in glass tubes a lubricant necessary to assure free flow of mercury

Red Bank road would continue to manufacture and assemble transmissions. Borg-Warner Corp., Chicago, which now builds about half of the automatic transmissions used by Ford, would continue to produce under contract with Ford Motor Co.

Canon Steel Foundry Opens Shop

Lebanon Steel Foundry, Lebanon, Pa., opened on Dec. 30 its Centri-Die shop, having a capacity of 200 tons of high alloy centrifugal steel castings a month. New equipment includes: Three Ajax high-frequency furnaces; four centrifugal casting machines; two heat-treating furnaces; eight boring mills; and a large radial saw.

Oil Co. Leases Building

Shell Co., Long Island City, N. Y., leased a building at 19-35 42nd St., Long Island City. The company manufactures truck bodies and truck loading equipment.

National Lead Buys Ore Deposits

National Lead Co., New York, purchased several thousand acres of mineral-bearing lands, containing titanium and zirconium ores, near Jacksonville, Fla. The company ships the ore to St. Louis and Sayreville, N. J., where it is processed into titanium oxide pigments and to Niagara Falls, N. Y., for processing into ceramics, refractories, zirconium al-

loys and chemicals. National Lead has large deposits of titanium at its

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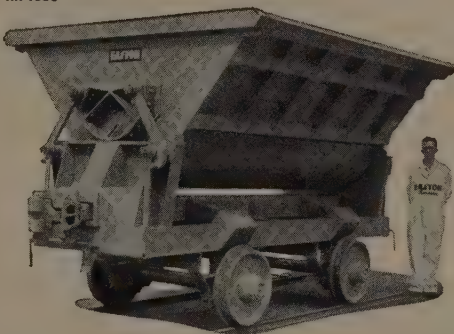
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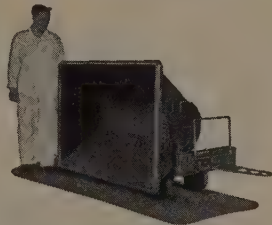
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MacIntyre development in the Adirondack mountains, New York, and has titanium mines and plants in Norway.

Quaker State Metals To Build

Quaker State Metals Co., Mountville, Pa., (successor to New Holland Metals Co.) manufacturer of aluminum sheeting and other building accessories, will build a plant in Lancaster, Pa. Luria Engineering Co., Bethlehem, Pa., was awarded the contract.

Baker-Raulang Buys Lull Mfg. Corp.

Baker-Raulang Co., Cleveland, manufacturer of industrial trucks, acquired Lull Mfg. Corp., Minneapolis, and will operate it as a subsidiary under the name of Baker-Lull Corp.

Testing Machine Maker Moves

Steel City Testing Machines Inc. moved to larger quarters at 8817 Lyndon Ave., Detroit 21. Louis Welt is president.

John Hewson Appoints Agent

John Hewson Co., New York — static controls and insulation testers—appointed A. R. Hough Co., Knoxville, Tenn., as its representative in that territory.

Walker Mfg. Leases Warehouse

Walker Mfg. Co., Racine, Wis., manufacturer of automobile hydraulic equipment and mufflers, leased a warehouse at 47-30 29th St., Long Island City, N. Y., which will be used for its eastern office and warehouse.

Gerrard Opens Service Section

Gerrard Steel Strapping Division, United States Steel Corp., Chicago, will open a product service section under the direction of Harry Reed, central district sales manager. Martin M. Groark, assistant manager, is in charge of light duty and specialty products while Richard G. Patterson, assistant manager, is in charge of heavy duty products. The new section will make available to shippers a specialized service to help them solve their packaging reinforcement problems.

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If you qualify and are interested in advancing with a continually expanding organization, write, giving complete resume of positions held and duties performed, education, age, salary desired, etc., to:

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The man in this position will report directly to our General Manager. This is a challenging opportunity for a man who would like to be a member of a hard-hitting management team in a progressive, fast-growing, \$50,000,000 company.

Replies may be brief, will be treated in confidence and should include age and home telephone number. Write Box 644, STEEL, Penton Bldg., Cleveland 13, Ohio.

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PLANT MANAGER: M.I.T. GRADUATE with 25 years' experience in Plant Management, including Production planning, machine and tool loading, Material and tool control, quality control, purchasing, incentives, standard cost, variable budgets, overhead analysis and break-even charts, job evaluation, supervisory responsibility chart and labor relations. Capable administrator with excellent record. Write Box 632, STEEL, Penton Bldg., Cleveland 13, Ohio.

WORKS MANAGER. EXTENSIVE BACKGROUND IN THE MANUFACTURE OF SHIP METAL AND STEEL PRODUCTS INCLUDING STAMPINGS, BUNS, FORMS, CABINETS, STRUCTURES, WELDMENTS, CODE V. SELLS, AND MACHINERY. EXPERIENCED ALL TYPES FABRICATING EQUIPMENT, MACHINE SHOP, TOOL ROOM, HEAT TREATING, FINISHING, AND MAINTENANCE. EXPERT IN METHODS. DIRECT ALL PHASES OF OPERATION INCLUDING ENGINEERING, PRODUCTION CONTROL, PERSONNEL, PURCHASING, ETC. COLLEGE EDUCATED. PRACTICALLY TRAINED. WRITE BOX 634, STEEL, PENTON BLDG., CLEVELAND 13, OHIO.

Help Wanted

STEEL SALESMAN: BAR MILL PRODUCT. Territory Atlantic seaboard principally southeastern States. Salary and expenses with additional incentive compensation. Reply complete resume stating salary expected. Write Box 643, STEEL, Penton Bldg., Cleveland 13, Ohio.

SALES REPRESENTATIVE WITH SOME ENGINEERING BACKGROUND AND FAMILIAR WITH STRUCTURAL STEEL FABRICATING AND ALLIED INDUSTRIES FOR MID-WEST TERRITORY. SALARY, EXPENSES AND COMMISSION. GIVE FULL INFORMATION—AGE AND QUALIFICATIONS. CORRESPONDENCE CONFIDENTIAL. WRITE BOX 625, STEEL, PENTON BLDG., CLEVELAND 13, OHIO.

SALES MANAGER'S OPPORTUNITY An aggressive Chicago manufacturer with number of products going to plumbing, hardware, refrigeration, steel and industrial fields needs a young sales manager with experience. Must know how to set up sales organization and be willing to travel. The right man after proving himself can acquire interest in business from owners who eventually want to retire. Reasonable salary to start with, something to look forward to in ownership. Replies held in confidence. Box 642, STEEL, Penton Bldg., Cleveland 13, Ohio.

PHYSICAL CHEMIST: Conduct basic research in an industrial laboratory on the physical chemistry of liquid metals. Organize and execute program leading to practical improvements in methods and materials for the oxidation and oxidation, desulfurization, etc. of steel and solution of other problems encountered in the melting of steel and other metals. Please send outline of qualifications, personal background, and educational summary. Write Box 641, STEEL, Penton Bldg., Cleveland 13, Ohio.

Representatives Wanted

Opportunity for Sales Representatives Who do Missionary Work An aggressive Chicago manufacturer has opening for sales representatives on a commission basis, that are willing to do missionary work on their products. The lines are nationally advertised and territories protected. Earnings directly in proportion to effort. Products are consumed and steady repeat business results. Write outlining lines handled, territory covered. Box 640, STEEL, Penton Bldg., Cleveland 13, Ohio.

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STANDARD GAUGE FREIGHT CARS

Box, Double Sheathed, 50-Ton Capacity

Gondolas, Composite, or All Steel 50-Ton and 70-Ton

Box, Single Sheathed, 50-Ton

Hoppers, Covered, All-Steel, 70-Ton

Tank, 3,000-Gallon, High Pressure

Hoppers, Twin, All-Steel, 50-Ton, Cross Dump

Tank, 8,000-Gallon, Coiled and Non-Coiled

Hoppers, All-Steel, 70-Ton, Cross Dump

EXTRA LONG FLAT CARS

40 & 50-Ton Capacity, Length 70' and 74'

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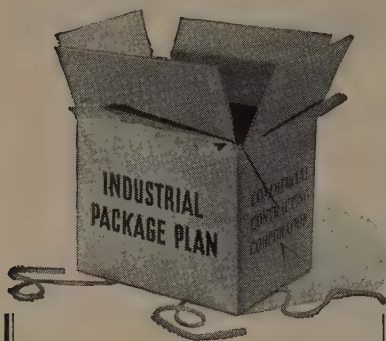
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Dan'l Boone Still Wields a Hammer

THE ANVIL rings with an old sound in the forge of Daniel Boone VI. At his blacksmithing shop in Burnsville, N. C. he follows the ancient trade of his illustrious great, great, great grandfather, using methods that haven't changed in centuries.

Architects, builders and interior decorators look to his forge as a source for authentic wrought iron hardware and decorative pieces. Working almost entirely by hand, he turned out the wrought iron pieces used in the restoration of colonial Williamsburg in Virginia. He takes as long as a week to turn out a pair of andirons.

Aside from a power grinder, Mr. Boone's lone concession to modern methods is a steam hammer (1) on which he beats out iron balls for andirons. He welds with the forge and hammer.

Most complex of his antique tools is the swage block (2), a slab of steel with various geometrical contours cut into it. He forms circular shapes on the steel cone visible in the picture.

Since few of the tools Mr. Boone needs are available from manufacturers, he must make his own. He has a bewildering array of tongs and hammers, each with its special use (3).

Sometimes in the opinion of other smiths he carries tradition to amusing lengths, as when he heaps up the forge coal in two neat opposing pyramids with the fire between (4). But apparently tradition pays. Mr. Boone gets about \$1000 for a large set of andirons.



Three Lio

Lander Co. Reorganized
ing-Lander Co., Rochester, N. Y.,
manufacturer of gears and speed re-
s, was reorganized from a part-
ip to a corporation. William H.
er, senior partner, was elected
man of the board; Richard E.
gh, president and general mana-
C. Wheeler Bishop, vice presi-
and treasurer; Fred A. Smyth,
resident and secretary.

Press Wringer Boosts Output
modern materials handling tech-
niques are speeding production of
commercial and industrial mop wring-
and allied floor cleaning equip-
at Geerpres Wringer Inc.'s new
at 1780 Harvey St., Muskegon.
The building represents an in-
crease of about 100 per cent in manu-
facturing capacity.

Opens Export Office
W. Onan & Sons Inc., Minne-
sota, manufacturer of electric gen-
erating equipment, opened an export
office at 141 Broadway, New York.
Callan is manager of the office.

Foundry Firm Leases Plant
American Machine & Foundry Co.,
New York, leased a building in Buf-
falo for defense production. Part of
the plant is being used for the final
assembly of oil cooler fans which the
company is making for Army tanks.
This is the firm's second plant in the
Buffalo area. The assembly line op-
erations have been moved from the
company's main plant in Cheek-
oga, N. Y., releasing about 30,000
square feet of space for manufacturing.

Oil To Build Pipeline
Sun Oil Pipeline Co. of Canada will
be organized as a subsidiary of Sun
Oil Co., Toronto, Ont., to build and
operate a pipeline from Sarnia, Ont.,
to Toronto. Sun Oil Co. is building
a refinery at Sarnia.

Sales Appoints Agent
Loco Sales Co., Chicago, named
J. Hammond Co., Milwaukee, as
sales representative for the south-
western and eastern portions of Wiscon-
sin. The company is engaged in the
machine and tool business.

Researchers Plan Laboratory
Luminous Coal Research Inc.,
Pittsburgh, will operate an industry-
research laboratory. A building will
be leased in Columbus, O., to house
Columbus staff of the organiza-
tion and to provide facilities for de-
velopment and pilot-plant
testing of equipment and processes
being investigated under its general
research program.

January 19, 1953

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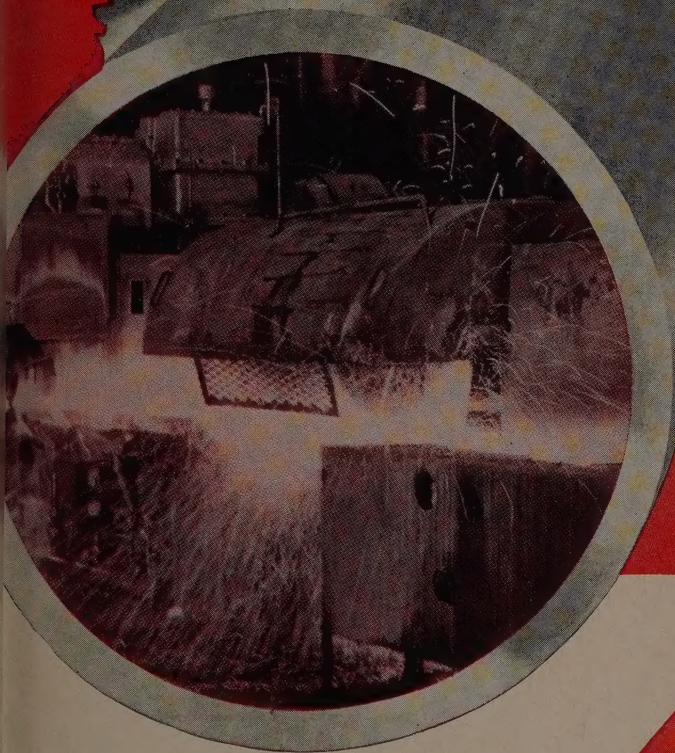
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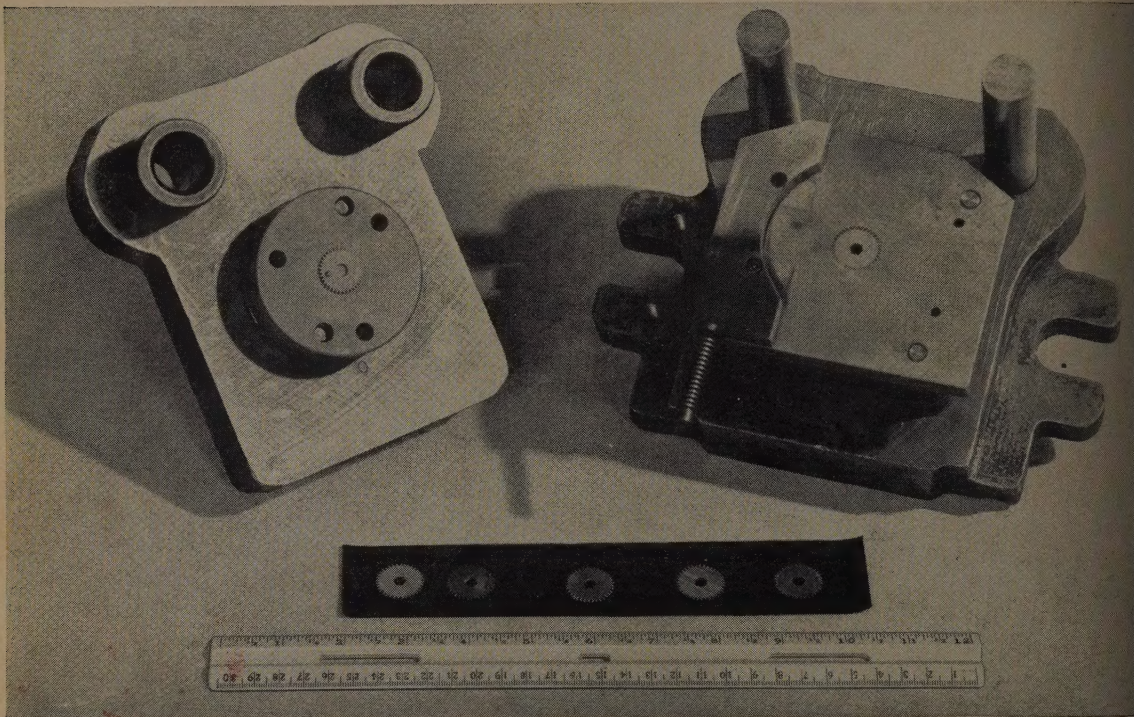
Designers and Builders to the Ferrous,
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AETNA-STANDARD ENGINEERING COMPANY • PITTSBURGH, PA.

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Graph-Mo[®] steel dies produce up to 80,000 parts without throwing burrs



THE Reliable Tool and Die Company, Cleveland, Ohio, was having trouble with the chromium and carbon dies it used in making small, intricate gears and parts for electric motors and toy mechanical winding motors.

The dies were throwing burrs. The parts often tore when broached. Gear teeth spalled in the dies. And die life was short due to chipping of the cutting edges.

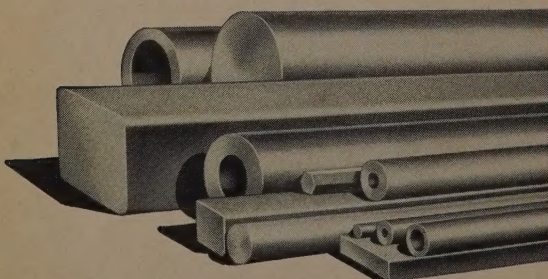
Then Reliable's engineers tried Graph-Mo[®], one of four Timken[®] graphitic tool steels. The Graph-Mo blanking dies produced as many as 80,000 parts without a single burr. Because of free graphite in its structure, Graph-Mo has outstanding low-friction properties: minimum tendency to scuff, seize, score or gall. Tearing and spalling

were eliminated. And the cutting edges stayed sharp and true because the diamond-hard carbides in Graph-Mo give excellent resistance to wear and abrasion.

Graph-Mo also offers other advantages. It responds uniformly to heat treatment, permitting close tolerances on the parts. It has good stability, and is easier to machine than ordinary tool steels.

For information on the four Timken graphitic tool steels and their use in punches, dies, gages and machine parts, get the new 10th edition of "Timken Graphitic Steel Data Book". Write on your business letterhead to The Timken Roller Bearing Company, Steel and Tool Division, Canton 6, Ohio. Cable address: "TIMROSC".

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